

PERFORMANCE, TECHNOLOGIES, PHENOMENOLOGY



# PERFORMANCE

SUSAN KOZEL

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# PREFACE

xiv This book draws together three areas: live performance, digital technologies, and the philosophical practice of phenomenology. It offers the reflections of someone trained in dance and philosophy on a range of technologies, from fairly low-tech to more sophisticated systems. Physical interfaces, embodied philosophies, sensory engagement with the world and with others, embodied imagination, the politics of bodies reflected through cities, and even the act of writing; at the center of it all are bodies. Yet this is not a book by a dancer about dance, by a philosopher about philosophy, or simply a chronicle of the ever-expanding array of interactive systems and devices for artistic, social, or physical computing. It is about what can be discovered and created as we become closer to our computers and closer to others through them, when they become extensions of our way of thinking, moving, and touching. This book does not just offer an analysis or a critique; at the heart of it is a method for *how* to discover, create, and listen as we become closer to our technologies.

Echoing the worn wisdom that art reveals life, the premise of this book is that the dance or performance studio is a hothouse for understanding wider social engagements with technologies. In the case of the projects explained in the chapters of this book, the so-called dance studio was usually a lab, but occasionally a kitchen, a hotel room, a gallery, or simply a corner in which were crammed at least one body and at least one computer, plus usually an Internet connection and a sensing device sometimes as basic as a webcam. The simple point to be made is that the body of the dancer is the site of discovery, and what is discovered may shed light beyond the seemingly arcane space

We would perhaps find the answer in the tactile palpation where the questioner and the questioned are closer.

—MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

of the studio. The act of performing in responsive systems acts also, with appropriate strategies for reflection, as a catalyst for understanding how human beings encounter themselves and others through computers. It reveals the potential for both beauty and abjection when bodies and computers become closer. Yet there is still more to this argument than asserting that the performative moment is a condensed moment of everyday usage.

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What is revealed through the phenomenological reflections offered in this book is that potentially dense or difficult concepts can be demystified and given a sort of intuitive fluidity once they are read through the body. Perhaps these are just modest glimpses of otherwise abstract or incomprehensible concepts—that our relations with the world and people are reversible, that the invisible is the lining of the visible, or that our digital data prompts us to reevaluate our views of ethics—but by being understood on a corporeal level the impact might just be lasting and have a transformative effect, subtle or great, on how we engage with our computational systems and with one another.

This book relies heavily on the writings of French phenomenologist Maurice Merleau-Ponty (1908–1961), a philosopher who has been neglected by most but is beginning to infiltrate philosophical discussions. Merleau-Ponty was never given the public attention accorded to Jean-Paul Sartre, Emmanuel Levinas, or Jacques Derrida. There is speculation as to whether this may be because of his retiring personality and his political rift with Sartre in the 1940s, because he died leaving his major



body of work incomplete, or because his thought is too complex. Dermot Moran credits him with shunning clarity in the attempt to write and live the poetry of the chiasm, but at the same time producing undoubtedly "the most detailed example of the manner in which phenomenology can interact with the sciences and the arts," and a potent description of the human body in the world (2000, 430-434). It is my contention that being able to describe the human body in the world, particularly as the world changes dramatically and rapidly with the proliferation and dissemination of technologies of all sorts (from smart wars to Internet shopping to genetic engineering) can't help but be a useful skill.

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As a method, phenomenology involves a return to lived experience, a listening to the senses and insights that arrive obliquely, unbidden, in the midst of movement experiments or quite simply in the midst of life. Phenomenology, in short, allows me to respect these sensations and inner voices, these unformed ideas, thoughts, or images that emerge directly from the experience of being in computational systems like telematics, motion capture, or networked wearable computing. Bodies are more than just meat; they are sources of intelligence, compassion, and extraordinary creativity. In some respects this book comes from a personal, creative place: I needed a methodology to allow for a passion for philosophical concepts from the wider world to converge with innately philosophical concepts, and even critiques, that were embedded in my body and surfaced through movement. I needed a methodology that not only would respect my highly subjective experiences, but also might provide a dynamics for revealing broader cultural assumptions and practices, for acknowledging the reality that all bodies exist with and through other bodies in social and political contexts. And I needed a methodology that operated through resonance rather than truth. Over more than ten years I developed my own methodology based on these professional artistic needs, and this is what I offer in the pages to follow. I have a sense that this is a good time for a reworking of phenomenology, that the examples of phenomenologies presented here might be meaningful not only for the concepts they reveal but also for the method that is deployed. Perhaps my extrapolation of the phenomenology of Merleau-Ponty will be of interest, or even a provocation. Strong sentiments are appreciated: outrage, excitement, epiphany, confusion, fear, or pleasure. I like to think that this book might inspire others to attempt their own phenomenologies. Philosophy is, if anything, an emergent field, but one that just happens to be thousands of years old.

This book's phenomenology of closeness between bodies and computers aims to satisfy a few pragmatic goals. First, within an academic context it can be seen to fill a gap in scholarship and

in broader cultural discourse around digital technologies. The combination of performance and phenomenology yields entwinements between experience and reflection that may shed light on, problematize, or restructure scholarly approaches toward human bodies using digital technologies. Next, in a broader discursive context that includes cultural practice and attitudes not confined to academia, it seems that there continues to be a sense that computers and virtual technologies of all kinds engineer a duality between human and computer, material and immaterial, analogue and digital, organic and inorganic, and body and mind, with the body side of things coming out the worse for wear. At the end of the 1990s I hoped that I would no longer have to maintain a public profile as a member of what I wryly referred to as "the body police," one of a group of voices to call repeatedly for attention to be paid to the presence of the body in our computer systems, be these ambient, responsive, or virtual. I hoped that the era of celebrating the seduction and abandonment of the body by and within virtual reality was over. Unfortunately, flesh still struggles in the face of the machine, or oozes onto it, as these constructions of materiality continue to taunt one another. This book argues for more than an integration of the body-machine duality, more than a creation of a continuum or spectrum with body at one end and mind at the other, but takes an immanentist approach to each of the dualities listed earlier as enfoldings or entwinements. As will be clear from the many citations across the chapters of this book, I am, happily, not alone in this venture. Finally, and from a design perspective, a hope exists that either these reflections, or those by others that may follow in this same vein, may have some impact on the design and use of our next generation of computational devices and systems. Every stage of human development, mechanical, intellectual, physical, or spiritual, can only benefit from a better understanding of "who 'we' are, who 'we' have been, and of who 'we' might come to be" and, above all, that things might be otherwise (Critchley 2002b, 87). A belief in the transformative potential of the extraordinary alchemy between bodies and technologies is the foundation of this book.

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Each chapter is devoted to explaining a set of philosophical concepts embedded in the performative experience of particular configurations of technologies. The chapters are phenomenologies, and they contain phenomenologies: layers of reflection are enfolded in each chapter, and some passages directly describe sensations of being in a particular system, while others are devoted to extrapolating these through the philosophical concepts of a range of thinkers. It seemed essential to provide a substantial chapter to ground and contextualize the chapters devoted to performances. This is the role of chapter 1. It outlines an approach to phenomenology developed over the years—the concepts, context, and rationale, as well as kindred thinkers. Ambitiously, I offer a



practical methodology to follow in order to answer that most practical of questions: "But how do I do a phenomenology?" As chapter 1 draws to a close, sections are devoted to clarifying the key concepts of performance, technologies, and virtuality. Words that we hear all the time, words that seem to fade into the white noise of our cultural life, are first exposed as polysemic, then carefully interpreted and released, becoming embedded in the reflections of the following chapters. Chapters 2, 3, 4, and 5 are written in a chiasmic form: that is to say, there is as much of an emphasis on performances with technologies as there is on the thought that emerged from the performances. This corresponds to the Merleau-Pontian chiasm by being an overlapping and entwining dynamic between concepts and the lived moment of doing, between reflection and experience. Of course, this is a book and not a live event, interactive DVD, or game, so there is a bias toward linear presentation of ideas in a conceptual and linguistic form; still, the flexibility of language is pushed at times in order to yield as much of a sense of "being there" as possible, without dissolving scholarly prose into poetry or claiming that the writing of the event can replace the live event itself.

- xviii Chapter 2 presents the notion of extended bodies through several telematic performances that took place mainly in the 1990s. The technologies of the era are respected, as are the reflections they evoked. This chapter brings to the surface ideas that will be elaborated in later chapters, such as flesh, networked space, and reversibility. It also critiques an idealist notion of telepresence and online interaction by providing a materialist account of space and virtuality. Complementing reflections on four performances is a phenomenology based on a pedagogic experiment. This is the only section to address directly potential educational uses of online technologies, despite the fact that many of the performances in this book had workshops integrated into their devising or touring phases.

Chapter 3 offers a poetics of responsivity based on Merleau-Ponty's dynamic of reversibility. Only two projects are addressed: *Plaatsbepaling*, through which reflections on time and the body emerge, and the responsive installation *trajets*. With these projects, not only is the locus of performance distributed across organic and inorganic structures of varying degrees of materiality, but also the complexity of experiential voice and perspective is set into play. The discussion of *trajets* begins with a first-person phenomenology and ends with a ecosystemic approach; this journey is facilitated by a transition from Merleau-Ponty's idea of flesh into Deleuze's construction of metabolism. Both projects are examples of responsive architectures converging with performance from which two genres emerge: the performative installation and the participatory installation.



Chapter 4 considers notions of intersubjectivity and otherness through performative experiments with motion capture. The technologies range from older motion capture (mocap) systems to tenuous hacked-together constructions to more sophisticated and expensive configurations. Each of the systems used in the performances and installations in this book offers challenges for understanding human bodies and social embeddedness, making clear that our existing metaphors, structures, and conventional knowledge frequently are not capable of explaining these shifting alchemies of bodies and computers. This is particularly true with the last two chapters, and for this reason the question of ethical relationships between ourselves and others, ourselves and our digital representations of ourselves, becomes relevant. Levinas is called upon to develop an understanding of otherness, and Deleuze's interpretation of Spinoza's ethics is also used to problematize and deepen the discussion. In short, this chapter poses the question of whether we can have ethical relationships with digital data, whether a human ethics can be developed from human-digital interactions. A version of embodied ethics from the continental philosophical tradition as opposed to applied moral philosophy is used to reflect upon this question.

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Finally, chapter 5 takes the momentum toward closeness and dissolving the barrier between bodies and technologies one step further by considering Merleau-Ponty's notion of flesh in the context of wearable computing—in particular, the *whisper[s]* project. A distinction is drawn between wearables and bio art, while at the same time the metaphor and physical reality of human connective tissue is expanded to account for "data choreography" across bodies and mobile wireless networked devices. With wearables we can connect with ourselves, with another, or with a wider group of people. This poses the question of whether they fall into the domain of locative media and invites debate from geographers as well as locative media artists and designers. At the end of the chapter, a construction of the object as it applies to wearable computing is offered.

I understand, on a visceral level, the words of writer and playwright Hélène Cixous when she says, "One can die from being unable to write in time the book one has in one's body. This is the book that must be braved, it demands of me a courage I desperately seek to call up in myself" (1998, 17). I do not think of myself as particularly courageous, but I can speak to the discomfort that arises as thoughts well up in a body. Like moving beings, there is a need for them to be released, to escape into the air and the sunlight. I hope the timing is right and these words find resonance within immanent spaces in the bodies of readers, perhaps even fostering new phenomenologies.

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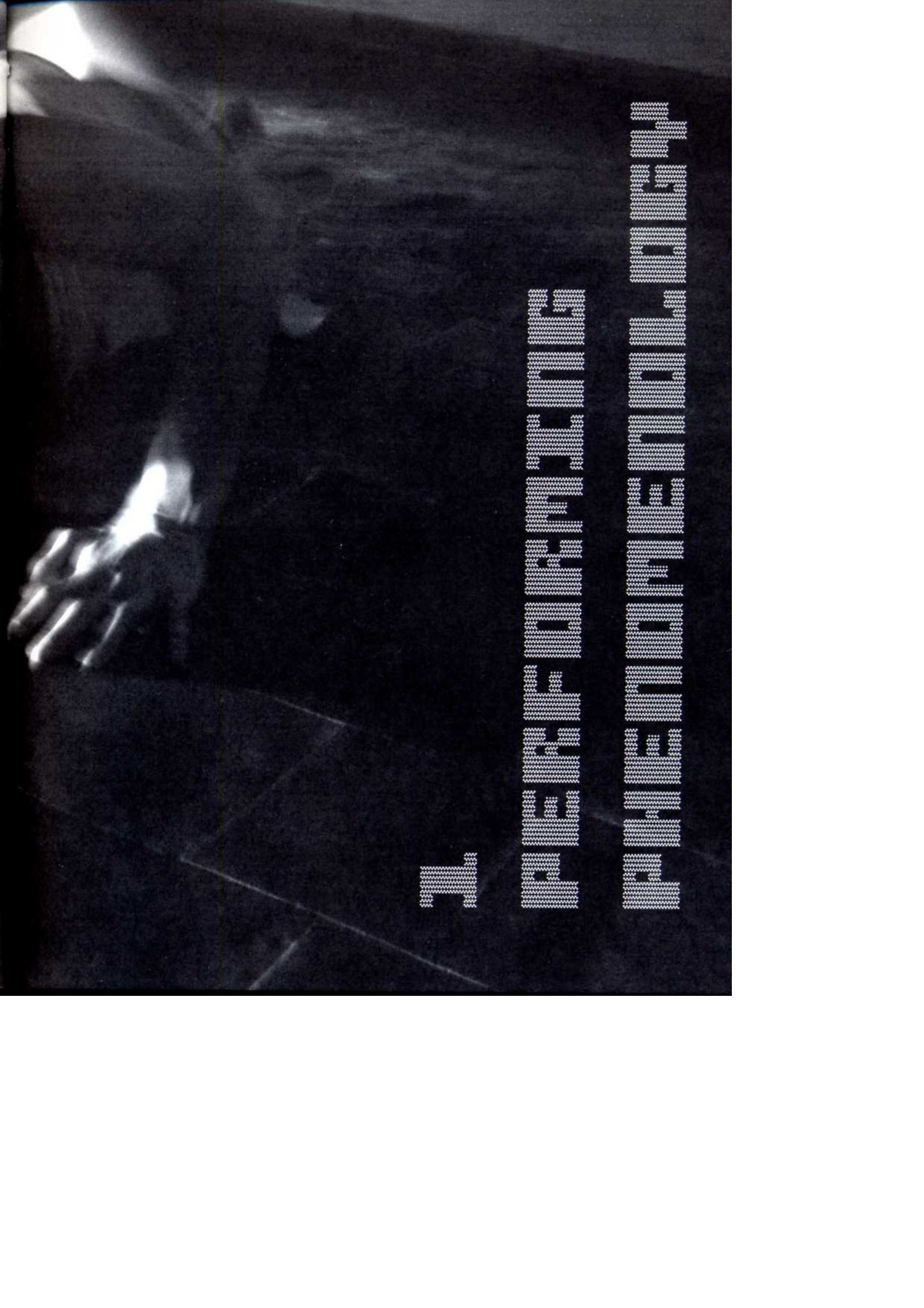
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Phenomenology. The central nervous system's brave gamble that it exists.

—J. G. BALLARD. *Project for a Glossary of the Twentieth Century*

- 2 Phenomenology is central to this book, but the following pages do not present a typical transcendental or even existential phenomenology. What is offered is a contemporary adaptation of the later thought of Maurice Merleau-Ponty, filtered and expanded through the voices of others including Emmanuel Levinas and Gilles Deleuze. This embodied approach to the construction of meaning is sufficiently flexible to deal with unexpected or unprecedented experiences, but it is more than a methodology. A phenomenological approach manifests itself as a way of living in the world that integrates intellect with sensory experience and does not flinch from that which seems to be paradoxical or ambiguous; it can be used to construct meaning, to celebrate the mundane as well as the extraordinary, or to critique thought, attitudes, or social structures. I have found Merleau-Ponty's phenomenological writings particularly useful for making connections across disciplines, practices, or concepts. The fundamental embeddedness of this phenomenological approach means that it can be generous and poetic at the same time as rigorously anchoring concepts in concrete reality. Many of the technological systems described in this book were entirely new to me, including motion capture, telematics, and wearable computers. I had no frame of reference for them, neither conceptual nor physical, there were no pre-set modes or patterns I could assume, and apart from a desire to retain the body as the basis of knowledge and experience I had no investment in the outcome of my investigations: What I had was a love of movement and a philosophical approach to the world that permitted me to listen to my body, to sense the world, and to ask questions and derive, if not exactly answers, at least connections and ground for further questioning. This long first chapter provides the basis for the rest of the book. It can be read on its own or used to



In other words, as soon as an art has become autonomous, it makes a fresh start. It is therefore salient to consider this start as a sort of phenomenology. On principle, phenomenology liquidates the past and confronts what is new.

— GASTON BACHELARD, *The Poetics of Space*

better understand the four chapters that follow. Almost like a camera's lens, or the acts of exhaling and inhaling, the chapter sections shift from wide to narrow focus and back again, external and internal to the material of the book. The first four sections (Science Friction, An Unavoidable Necessity, The Pre-reflective, and Resonance) provide a general intellectual and political context for a phenomenological approach to technologies and performance. This is not intended to be a comprehensive overview of the philosophical tradition of phenomenology; there are excellent books that do this already. The next five sections (Connective Tissue, Flesh, Reversibility, The Invisible, and Disequilibrium) narrow the focus to some of the more dense and complex concepts from Merleau-Ponty's late writings. *The Visible and the Invisible* (1968) is an unfinished and perplexing book: for clarity, I provide interpretations of key concepts appearing later in this book. Broadening the scope once more, the next three sections (The Method, Heterophenomenology, and Sexual Difference) raise some practical, methodological issues. Finally, the last sections of this chapter (Performance, Techne/Technologies, and Saturated by the Virtual) offer a topography of the significant components of this book set forth in its subtitle: performance, technologies, and phenomenology. Each word points to theoretical and practical domains in which reside, not always harmoniously, a complex array of positions. Most of chapter 1 is devoted to explaining an approach to phenomenology, to illuminating the methodology that breathes life into these pages, but performance and technologies are equally important and entwined throughout. The final three sections outline an approach to performance, technologies, and the increasingly important designation of the virtual. How these play out in the rest of the book is specific to their context.

## SCIENCE FICTION

4

Phenomenology is a philosophical and existential approach to life, the body, politics, and meaning with roots in European thinking of the twentieth century. Like many conceptual movements emerging from volatile intellectual and political times, it inspired or irked in equal measure, provoking two or more generations of thinkers, artists, and students. Then it was dropped, or entered a period of latency. From the 1980s to the 1990s it became unfashionable to study phenomenology, almost politically suspect in the era of textual deconstruction and psychoanalysis, the time of the fragmentation of the body, identity, and the subject. The state of being in or out of fashion reflects a serious zeitgeist; it is more than a vacuous and superficial consumer-led following of transient styles by brittle people. Fashions in thought and design reflect anxieties as well as pleasures, blooming and extinguishing against an "unstable backdrop of rapid social, economic and technological change" (Evans 2003, 4); they indicate a need for intellectual and cultural nourishment. Saying that philosophies are subject to fashion is to respect their role in the fabric of culture and society rather than to place them on an academic shelf, once removed from the pulse of life. Nor is the term *consumer* innately trivial or base: we consume our worlds through our perception and motility, we integrate our surroundings into our bodies, we swallow, digest, and live from our milieu, and if it no longer nourishes us we crave something else. Fashion is about transformation, about overcoming exhaustion and revivification; we insert ourselves into a philosophy and it transforms us from the inside out. Phenomenology appeared exhausted in the 1990s, seeming to offer less rigor, insight, and inspiration than other philosophical lenses for examining the world. The critique of it as

I was writing anyway, I was writing nevertheless, I was writing despite.

—MARGARET ATWOOD, "If You Can't Say Something Nice, Don't Say Anything at All"

fundamentally a male, subject-centered approach to transcendent meaning overshadowed the validity of its basic tenets for a while—for a short while. Still, the core of phenomenology survived: that it calls for a return, again and again, to lived experience; that it takes as its starting point a position prior to, or beyond, the subject-object divide; that it shapes a reflective process that opens itself onto the richness of pre-reflective experience; that it is inclusive of a variety of experiences and not bound to a narrow and abstracted notion of truth; that it provides scope for the many dimensions of what we are as human beings to contribute to the expansion of knowledge and creation of cultural artifacts. Bodies, thought, imagination, memories, material conditions of life, and affect find a voice through phenomenology.

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The revitalization of phenomenology is the result of a convergence of theoretical, cultural, and artistic forces and produces a new embodiment of older ideas. I have witnessed a need in dancers, artists, writers, cultural critics, and feminists to be able to describe concrete, lived human life, without forcing it through a methodological framework, or reducing it to a series of inner psychic experiences or conceptual abstractions (Moran 2000, 328). I have encountered also numerous students struggling with how to integrate their own experiences in their academic work. The writings of the twentieth-century phenomenologists, in particular, Husserl, Heidegger, and Merleau-Ponty, remain the "phenomenological canon" to which people turn, but, swallowed and digested, their words become imbued with meaning and relevance to our times and cultural





6 metamorphoses. This amounts to a cyclical corporealizing of the thought of our predecessors, and is compelling for seeming to pull in two directions at once: both respecting and disrespecting the tradition. The tradition is respected because the ideas are deemed meaningful or relevant to our embodied experience rather than simply out of blind adherence to their place in the canon, but creative disrespect is demonstrated as the ideas are interpreted, adapted, expanded, and elaborated. This interrogation of lived experience coinciding with an interrogation of the phenomenological texts themselves is, to use Merleau-Ponty's phrase, an "inspired exegesis," and, like inhalation and exhalation, new readings breath life into the words (1968, 13). Taking inspiration from the original phenomenologists inevitably requires overlooking certain limitations as being products of different times; in the case of this book, the most problematic are narrow constructions of gender (some worrying references to women), art (a seeming limitation to painting), and technology (as uniformly hostile to bodies). In my view, phenomenology can never be adopted as a doctrine because it is experiential and not prescriptive, but paradoxically, by not being doctrinaire about phenomenology it is possible to become ever more vibrant phenomenologists.<sup>1</sup>

Contributing to the revitalization of phenomenology is the realization that the existing paradigms for research and the construction of meaning need to be expanded. The urge to move beyond existing categories of thought, and codes and conventions of understanding, begins with an unease that is as physical as it is intellectual, like an itch or shoes that no longer fit, crushing our toes and

FIG. 2 above, *immanence*, 2005

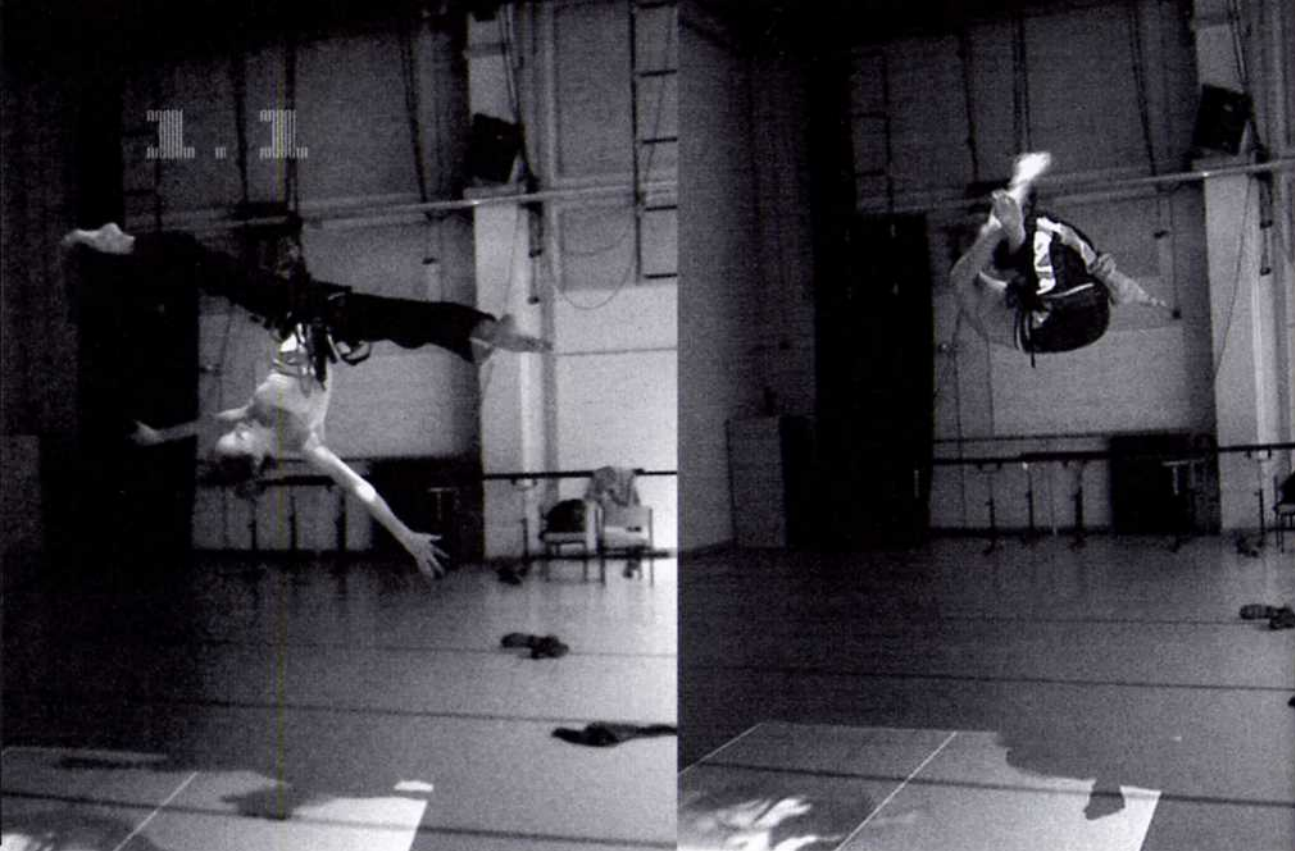


hampering us on a journey. The experiences described in this book are new or at the very least remixed, and they require new, as well as old, ways of understanding. These experiences are of a different register partly because they are increasingly facilitated by ever-expanding computational technologies, but also because human beings seem to be demanding a different range of physical experiences. Witness the expansion of people practicing yoga, martial arts, extreme sports, the extreme (or extremely banal) emotional narratives of reality TV, the upsurge in adventure travel, the continued alteration of our moods and physical well-being with diet, alcohol, and drugs, both legal and illegal, and the transformation of bodies through fashion, piercing, tattooing, and reconstructive surgery. All of these indicate either that our current mental and physical states are intolerable and we are desperate to converge them with some sort of norm (the ideal nose, or Orlan's more sinister take on the norms of beauty), or that we are searching for, even craving, something new. These may be the indulgences of an affluent Western middle class, but the basis is the desire for an expansion of perception, of consciousness, and of bodily experience, and a sense that what currently exists needs to be transformed. What needs to go along with these changing experiences are new ways of understanding or interpreting them. Mark Taylor captured this succinctly when he identified a "need to develop new ways of understanding the world and of interpreting our experience" growing out of living at a time "of extraordinary complexity when systems and structures that have long organized life are changing at an unprecedented rate" (2001).

7

FIG. 3 above, *immanence*, 2005





8 When our existing conceptual paradigms no longer do justice to our range of experiences, there is the choice to abandon entirely the process of reflection, just *to be*, without the need to understand and reflect, or to attempt to find other paths of reflection. I share the belief with so many philosophers and psychologists that we are fundamentally reflective creatures, and that it is, on some level, impossible for us not to reflect. If this is the case, then we may as well do so intelligently and with some panache. The shifting existential, political, and social paradigms we are experiencing require new modalities of reflection, which need to occur, in effect, out on a limb, reaching beyond our existing methods and approaches while maintaining relevance to our lives.

The products of such reflection, which I will define and explain through the process of hyper-reflection after Merleau-Ponty, can span a range of output from scientific experiments to product design, musical composition, and choreography, but the most common and enduring communicative modality of phenomenological reflection is writing. This book is a piece of writing, writing through phenomenology and writing about phenomenology. Writing from the new is writing from the void, and it amounts to a writing from our own bodies, from the moment to moment of our own existence. Margaret Atwood, in a simple phrase, described the existential state of writing in a social climate where there were few precedents for professional women writers: "I was writing anyway, I was writing nevertheless, I was writing despite" (2001, 138). The viscosity of this sentiment, and its stubbornness, can be mapped onto an intellectual climate where there are few conceptual

FIGS. 4, 5 above, rehearsals for *contours*, 2000





paradigms for translating lived, embodied experience into the professional discourse of the academy. Writing from lived experience often amounts to writing without a clear methodological mandate, or demands the courage to assert that the methods are fluid and subjective. Paradigms are scraped together (defiantly, guilefully, playfully, intuitively) from philosophy, literature, the social sciences, physics. This bricolage or hybridization is done in part to find a voice in the academy, but more important, to help the writer herself understand what it is that she is experiencing and to communicate these experiences. It is done to give voice to the shifting terrain of the writer's experience and to find others with whom this might resonate, and to help her understand her own experiences and express them in such a way that others might find meaningful. This sometimes precarious process is sustained by the realization that reflection is not only a secondary process or a commentary on experience, but also the process of thinking that transforms the doing. "Reflection," Varela and his coauthors write, "is not just on experience, reflection is a form of experience itself" (Varela, Thompson, and Rosch, 1993, 27). Thought impacts experience just as experience impacts thought. Or perhaps they caress each other.

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A startling expansion of traditional research fields has occurred over the past decade and, with it, increasing respect for inter-, multi-, or transdisciplinarity both within academia and beyond. Areas that have been involved in creative permutations include biology, psychology, philosophy, performance, mathematics, media, literature, cybernetics, visual art, music, architecture, and

FIG. 6 above, *immanence*, 2005

electrical engineering. Advances in computer sciences have been the warp to the weft of these areas, and design continues to emerge as the lining of it all. Despite, or because of, the impulse toward plurality, methodology wars ensued at the beginning of the twenty-first century. The interdisciplinary academic circles in which I found myself on both sides of the Atlantic, spanning arts, dance, design, and information technologies, exhibited a perplexing return to positivism, to rigid formulas for research based on narrow notions of what constitutes validity and truth, combined with an intolerance for perceived mystification, obscurantism, or ambiguity. Economic constraints and tightened budgets for universities, emerging out of the "dot bomb" in the creative computer technologies sector, and the near eradication of national arts budgets in countries such as the United States, drew personal vulnerabilities to the surface and created, paradoxically, a narrowing of the spectrum of what constitutes valid research within the very contexts that were trying to expand and become multidisciplinary. A return was threatened, to the dominance of a paradigm based on an invisible observer conducting unbiased, objective, repeatable, verifiable experiments. Exhibiting her usual ability to sum up an intellectual state of affairs in a short phrase, Irigaray captures the prevailing bias: "Our subjective experiences or our personal opinions can never be used to justify any statement," claims the epistemologist of science." The subjectivity of the researcher was mandated, by both explicit academic rules and implicit peer-enforced codes, to remain "irrelevant, bodiless, morphologically underdetermined" (1993, 122, 133). Advancements in physics, science, and history from the first part of the twentieth century, such as the Heisenberg uncertainty principle, the impact of the observer on the observed as explained by quantum mechanics, and the realization that progress in science occurs through the overturning of previous "absolute truths" (Kuhn 1996) were not always evident in wider fields of research. To my ever-increasing bafflement, in some interdisciplinary contexts where a range of methodologies could be relevant, the third-person perspective threatened to nullify the scope for the first-person perspective, as if innovative research occurred apart from the bodies and minds of the researchers. Concerned by this enduring blind spot, Varela, Thompson, and Rosch (1993) suggest, after Merleau-Ponty, that science deems itself strong by preferring to manipulate things rather than live among them, when in fact, "my body must itself be meshed into the visible world; its power depends precisely on the fact that it has a place from which it sees" (Merleau-Ponty 1964, 166). Echoing this position, neurologist Richard Cytowic, in his study of synesthesia, encountered such resistance to accepting subjective experience, and such a tendency to believe anything that could be confirmed by "technology," that he proclaimed our culture to be "addicted" to notions of external objectivity: "Questioning its [synesthesia's] reality without first having some technological confirmation shows how ready we

are to reject any first-hand experience. We are addicted to the external and the rational. Our insistence on a third-person, 'objective' understanding of the world has just about swept aside all other forms of knowledge" (1995, 9.1).

This willingness, in Cytowic's words, "to accept the judgment of a machine" approaches a distorted version of what Merleau-Ponty calls perceptual faith, distorted because instead of the faith being based in the thickness of our own sensory experience, it is transposed onto the results of computational processes and the assumptions behind the algorithms that control them.<sup>2</sup> Varela, Thompson, and Rosch assert that the scientific position of resisting the validity of first-person lived experience of denying "what is most immediate and direct—our everyday, immediate experience" is increasingly difficult to reconcile with advances in the field of cognitive sciences. A "deep tension" ensues (1993, 12). I add that this situation causes tensions in our current era of increasing convergence between the body and computers where there is a need to understand the artistic, social, and ethical implications of this convergence, and to implement sensible and sensitive new designs for human-computer interaction. It is not about accepting the judgment of one over the other, of first-person methodologies versus third-person methodologies, but of recognizing that knowledge is constructed through the engagement between bodies and machines within the world, and that this knowledge can be arrived at through a range of methodologies and voices.<sup>3</sup>



# AN UNFATHOMABLE NECESSITY

To counterbalance this anachronistic, and simply weird, positivist turn occurring at the beginning of a new century, it became clear that a compelling approach to the validity of the subjective position in research was needed: a respect for the lived experience of the scientist, researcher, artist, designer, and writer, and an acknowledgment of the sometimes anarchic results borne from the marriage of perception and imagination in the process of thinking and doing. It also became clear that the perspective of dance and philosophy provides an authentic stance from which to reflect upon the wider implications of human bodies using digital technologies, filling a gap in scholarship and in broader cultural discourse around digital technologies. I became increasingly aware of the need for a generosity toward the different methodologies and results inevitable when people of many cultures, physicalities, genders, and training undertake research or creation in any field; at the same time, I developed a thirst for conceptual depth that could excavate and articulate experience, thereby pushing the whole field further. Unexpectedly, a visceral understanding of Husserl's *Crisis of European Sciences* came out of this dual need. Written between 1934 and 1937, Husserl lamented the "positivistic reduction of the idea of science to mere factual science," and the loss of science's meaning for life through excluding the "valuative positions" of the "human subject matter and its cultural configurations" (Husserl 1970, 6). The changing world for Husserl, recalling that his writing spanned the turn of the twentieth century, the First World War, and the acceleration into the Second, caused him to acknowledge "world enigmas that were unknown to earlier times" and to locate these not externally, but rather to say that "they all lead back to the enigma of subjectivity

Focusing on the cognitive activity that occurs in that very special space I call the hinges of the *immediate present*. For it is in the immediate present that the cognitive subject actually lives.

—FRANCISCO VARELA. *Ethical Know-How: Action, Wisdom, and Cognition*

and are thus inseparably bound to the enigma of psychological subject matter and method" (ibid., 5). He spoke of "the unavoidable necessity of a transcendental-phenomenological reorientation of philosophy" (ibid., 3, note 1).

13

This book does not offer a transcendental phenomenology after Husserl; the approach that unfolds through reflections on the lived experience of performing in responsive technological systems is instead a highly existential phenomenology derived largely from the late work of Maurice Merleau-Ponty. I have been asked why I do not come up with a new name for this methodology, why I feel compelled to hold onto the old term, one that still bears traces of the Husserlian search for lasting truths or essences from out of experience. From a feminist perspective, phenomenology is often critiqued for failing to specify the kinds of bodies and sexualities behind the lived experience in question, or for an inability to deal with power relations embedded in perception.<sup>4</sup> Further, Merleau-Ponty's early work, *Phenomenology of Perception* (1942), is seen to overlook his own corporeal complicity in his description of the body in its sexual being, resulting in his implicitly positing the viewpoint of the white, European male (Butler 1988; Rothfield 2005). From a Deleuzian perspective, phenomenology is dismissed for being pinned to an archaic notion of the "body proper" (Gil 2002). If it weren't for Merleau-Ponty's late work, I might have considered a new name for the approach to embodied inquiry that has emerged through performance with digital technologies. But the choice was not simply intellectual; the raw appeal of the word "phenomenon" had an impact,



14 spanning the human and nonhuman, animal and machine, microscopic and macroscopic. I believe in the ability of language to reinscribe meaning, in a sort of hermeneutic cycle of rebirth. So the word phenomenology had to stay, reworked from within and without, and through this reworking the preceding critiques are either addressed or countered.

Merleau-Ponty's late work, the highly poetic, evocative, perplexing, and sometimes infuriatingly contradictory and opaque thoughts found in *The Visible and the Invisible* (1968) and in the monograph "Eye and Mind" (1964a) are my inspiration. *The Visible and the Invisible* is unfinished; it is loose and aphoristic not by intent but because it was incomplete when he died in 1961. It has the vibrancy of someone writing with the rush of new ideas, the courage of someone distancing himself from his previous limitations, and possibly the rashness of someone who is not worried about consolidating his academic position or political ties. (Merleau-Ponty severed his political ties with the French Marxist party and with Sartre sometime before this.) "Eye and Mind," written in 1959, is an essay on the art of Cézanne and embodied human perception. As indicated previously, these are the words I swallowed and digested, until I took a side step from the world of philosophy and came to dwell more directly in dance and computational arts. I was prepared to move on, to surrender the Merleau-Pontian preoccupations as those of an earlier self. Peculiarly, they never left me. In fact, the act of distancing myself from the academic world of philosophy, in order to work and teach as a dance artist collaborating across disciplines using a range of computer technologies, made

FIG. 7 above, *trajets* video shoot, 2005



me see the increasing relevance of a modified phenomenological approach, even the necessity of developing thoughtful and philosophically well-grounded first-person, or subjective, approaches to research.<sup>5</sup> This seemed particularly true when collaborating on artistic projects with both low and high technologies: we needed to figure out *what* we were doing *while* we were doing it. We were short of precedents. It is true this work does not merit the moniker "new": Loie Fuller and the Futurists worked with light, image, sound, and machines; Etienne-Jules Marey and Eadweard Muybridge worked with motion capture; and many artists and performers in the 1960s such as the E.A.T. collective used a range of devices and projections. What was lacking were methodological precedents. I was less concerned with formal, historical, or critical accounts of what previous artists did than I was with the implications for corporeality, intersubjectivity, and ethics, the transformations of time, space, and motion as understood through the flesh of the experience. This was not always documented. In true chiasmic fashion, I let Merleau-Ponty's thought go and it rebounded on me, with the alluring twist of the Mobius strip. As I continued to make art, think, and teach, sensitive to the tremendous changes in the world, an expansion of phenomenology became for me, as it was for Husserl, an "unavoidable necessity," and a creative and political imperative. Echoing Deleuze, "the notions of relevance, necessity, the point of something" became far more important, or, as he says, "a thousand times more significant than the notion of truth" (2001, 125). Relevant phenomenologies are called for.

# THE PRE-REFLECTIVE

- 16 This book elaborates a version of phenomenology that does not attempt to posit truths, but instead acts as a chiasmic, embodied, first-person methodology with the objectives of understanding, expressing, and extending lived experience. The extension of lived experience happens not only by extending our human senses but also by exploring the depths of our relationships with others. This reflects the belief that the imperative behind phenomenology is not only to understand ourselves, but also to share this knowledge with others. In "Eye and Mind" Merleau-Ponty refers to "the others who haunt me and whom I haunt" (1964a, 161), and further, in *The Visible and the Invisible* he says that in "floating in Being with another life" our movement, touch, and vision apply themselves to the other and "in the patient and silent labor of desire, begin the paradox of expression" (1968, 144).

When Merleau-Ponty claimed in *Phenomenology of Perception* that phenomenology is a philosophy "for which the world is always already there before reflection begins," he already evokes a sense of reaching back before or behind reflection. The efforts of philosophy, he said, "are concentrated upon re-achieving a direct and primitive contact with the world, and endowing that contact with philosophical status" (1989, vii). Already the question of the pre-reflective arises, and the implication that phenomenology invites a duet between reflection and the pre-reflective, between language and the pre-linguistic, between concepts and the pre-conceptual. The pre-reflective is "the prior ground or condition of both the subjective and the objective" (Maitland 1995, 75). It is a linguistically ambiguous zone often better captured by literature, poetry, and art, which writer Ian

With regard to its subject-matter, phenomenology is the science of the Being of entities—ontology.

—MARTIN HEIDEGGER, *Being and Time*

McEwan sketched in terms of flow, affect, and color: "This is the pre-verbal language that linguists call mentalese. Hardly a language, more a matrix of shifting patterns, consolidating and compressing meaning in fractions of a second, and blending it inseparably with its distinctive emotional hue, which itself is rather like a colour. A sickly yellow. Even with a poet's gift of compression, it could take hundreds of words and many minutes to describe" (2006, 81).

17

This belongingness with the world that preexists our conceptual engagement with it, but does not exist apart from it, causes Merleau-Ponty to use the problematic term *primitive*, and in his later writings he refers to the "primordial." Kearney, writing on Merleau-Ponty, qualifies this belonging to the world at the basis of phenomenological intentionality as not just primordial but as *mysterious*: the body is "a mysterious and expressive mode of belonging to the world through our perceptions, gestures, sexuality and speech. It is through our bodies as living centres of intentionality... that we choose the world and the world chooses us" (1986, 74).

Situating the "pre-" terms implied by phenomenological method (pre-reflective, pre-linguistic, pre-conceptual, even pre-rational) is challenging, and, not surprisingly, an emotionally and politically charged endeavor. In order to understand the goals of phenomenology and the role for the body in this process, it is useful to rely on a range of linguistic, spatial, and physical structures: the pre-reflective is considered through: first, language and gesture; next, a spatial understanding of regions



similar to a topographical mapping of external landscapes; and, last, an internal mapping of the regions of the body as if moving from topography to tomography. The components of language, landscape, gesture, and body work together to construct what it means, as David Bohm says, to "feel out" a new order and integrate it into our way of understanding the world:

**What, then, will be the new kind of description appropriate to the present context? As happened with Cartesian coordinates and the calculus, such a question cannot be answered immediately in terms of definite prescriptions as to what to do. Rather, one has to observe the new situation very broadly and tentatively and to "feel out" what may be the relevant new features. From this, there will arise a discernment of the new order which will articulate and unfold in a natural way (and not as a result of efforts to make it fit well-defined and preconceived notions as to what this order should be able to achieve). (2003, 128)**

18 The idea of side stepping preconceived notions is central to phenomenology. In phenomenological method it has been called the epoché, the procedure of bracketing that means to suspend, as much as possible, bias, expectations, or prior knowledge in order to inhabit the immediate moment of perception. On a more challenging level, the bracketing of existing conceptions of the world brings us face to face with the ill-defined zone of the pre-conceptual, or pre-reflective: phenomenology attempts to make explicit what is implicit in our day-to-day life (Critchley 2002a, 7). Obviously there is a logical problem in trying to use reflective practices to obtain access to the pre-reflective, but this is what phenomenology is all about. The tensions are clear and need to be stated up front: Can a process of thought reveal the pre-thought? Can a reflective practice bracket itself in order to reach a pre-reflective state without violating this state and itself in the process? Important implications regarding language and rationality cannot be avoided, such as whether, in attempting to reach this loosely integrated experiential state, we are assuming that we reach a pre-rational or even pre-linguistic zone; and, if so, whether we can possibly reconcile reaching this zone through a philosophical and fundamentally rational process, which generally unfolds through language. The assumption that it is even possible to shake off our inscription by language and culture in order to attain a dangerously ambiguous primordial state is troubling, and is the ground for one of the feminist objections mentioned in section 1.2. The understanding of phenomenology crafted in this book proposes that the goal cannot be to reveal fully, or to dwell, in any stable way within a primordial, pre-linguistic, pre-conceptual state. This would be disingenuous, not to mention highly politically and philosophically suspect: politically, for the implication that there may be people indigenous to this irrational zone such as women, children, the insane, the uneducated,

or anyone even vaguely "other"; and philosophically, for entrenching further the duality between the pre-reflective and the reflective. The impulse toward phenomenology as a method is based on the realization that we can loosen our rationalist structures of meaning sufficiently to permit qualities that are associated with the pre-rational, such as ambiguity of meaning, fluidity of existential and conceptual structures, scope for entirely new thought, perceptions, including contradictions, reversals of meaning, or paradoxes. A notion of the pre-conceptual world, not yet contained by our conceptual framework, is essential for us to be able to conceive of change. If we intend for reflection to suspend itself in the face of the pre-reflective, we make a commitment to maintaining the connection between reflection and its other in a fundamentally non-dualistic way, effectively a commitment to the porosity of reflection.

This paradoxical relationship between reflection and the pre-reflective is fundamental to knowledge. As Merleau-Ponty indicates, "It is by a secret and constant appeal to this impossible-possible that reflection can maintain the illusion of being a return to oneself and of establishing itself in immanence, and our power to re-enter ourselves is exactly measured by a power to leave ourselves, which is neither older nor more recent than it, which is exactly synonymous with it" (1968, 34). Another way of expressing this conceptual movement is through gesture: this philosophical impulse is like reaching beyond ourselves conceptually, perceptually, and existentially, but then returning to ourselves. It is similar to a reach of the arm or leg that takes a body into a state of disequilibrium and then back into an equilibrium that is somehow transformed through the process. This becomes a circular movement between the pre-reflective (or the unreflected) and the reflective, knowing that the process of reflection can only ever approximate the unreflected because it is impossible to shake off our cognitive reflective processes and undesirable to encapsulate fully the pre-reflective. It is, however, possible and even desirable to adapt and modify our reflective processes, to play with them and improvise through them to permit openings that allow for the emergence of the seemingly illogical, nonsensical, ambiguous, or even the preposterous or the sublime. These are akin to the moments of disequilibrium that punctuate any equilibrium sustained over time. It is important to indicate that the use of these distinctions (such as reflective/pre-reflective, rational/pre-rational, etc.) is to move us to a place beyond duality. The pre-reflective does not negate reflection but indicates a dynamic ontological state of entwinement or entanglement between the two. It is not a steady state; it appears and vanishes, in a constant sliding exchange with reflection.



Access to the pre-reflective can be obtained through particular suspensions of the reflective process, some of which resemble forgetting, as Valéry so aptly describes. A "forgetting" of expectations, a setting aside of intellectual or cultural bias, is a sort of bracketing in order to reach a new state of experience and meaning. As Valéry states, "To regain control of ourselves in the midst of the moving bodies, the circulation of their contours, the jumble of knots, the paths, the falls, the whirlpools, the confusion of velocities, we must have recourse to our grand capacity for forgetting" (cited in Cray 2003, 299). The act of forgetting, or "non-knowing," is given a particularly dynamic quality by Gaston Bachelard as he transposes it "immediately into a phenomenology of the poetic." Citing Jean Lescure to elaborate his point, he writes, "Knowing must therefore be accompanied by an equal capacity to forget knowing. Non-knowing is not a form of ignorance but a difficult transcendence of knowledge. This is the price that must be paid for an oeuvre to be, at all times, a sort of pure beginning, which makes its creation an exercise in freedom" (Bachelard 1969, xxix). The relation between knowing and non-knowing, between remembering and forgetting, further illuminates how, despite the seemingly oppositional or dualistic nature of the words, the states to which they refer are not mutually exclusive: there are patches of memory in forgetting and strands of non-knowing in the far-from-homogeneous fabric of knowledge.

20

Respecting the fundamentally reflective and rational makeup of who and what we are does not mean abandoning all appreciation for, and all role for, the parts of ourselves that may live beyond language and standard notions of rationality, such as emotion, affect, and intuition. An application of Merleau-Ponty's phenomenology can be used to escape the polarization that developed as a reaction to much of the French feminist writing in the 1970s and 1980s, which indicated that women had to choose between being forced to live in patriarchal social, political, and linguistic structures, or escape into the poetic, semi-madness of an irrational feminine essence, abandoning the semblance of rationality, logic, and language. Setting aside the either/or of rationality or irrationality, Merleau-Ponty posits a chiasmic dynamic to thought and uses a spatial and gestural understanding of embodied perception coiling across itself and its object so that separating them makes no sense. The thought of the origin, or zone existing prior to the codes of thought and language, is only ever a "mutilated thought of the beginning," which is like a step up, or, he says, a "ladder one pulls up after oneself after having climbed it" (Merleau-Ponty 1968, 35). This notion of a pre-reflective experience located both outside and inside oneself, like a topographical weave, is a crucial starting point for any phenomenological process: this starting point involves a willingness to receive something that may seem adverse to existing conceptual structures and an acceptance that we do not quite



know where it is or what it will look like. Or to use more of Merleau-Ponty's words, we have to allow for the "obverse" and the "reverse" of experience to shine through, and to intersect at oblique angles. Once some notion of the pre-reflective is drawn into the process of reflection, "there is a thought traveling in a circle where the condition and the conditioned, the reflection and the unreflected, are in a reciprocal, if not symmetrical, relationship, where the end is in the beginning as much as the beginning is in the end" (ibid.). The complexity of the construct of the pre-reflective is further enhanced when it is questioned from the perspective of the body, or as Rajchman (2001) says, the "being of sensation." Its abstraction tends toward an ephemeral immateriality, yet its challenge to language and logic makes the pre-reflective seem to be the domain of corporeality. Can the pre-reflective be abstract and corporeal at the same time? The body has rigorous and detailed structures of knowledge and communication, coming from many directions, according to its own logic and structures of meaning.<sup>6</sup> The voice of physical experience spans registers of language: words, gestures, sound, colors, textures, smells. There is never any question of entrapping corporeality in the domain of the pre-reflective, as if it were forever mute, brute, and material; bodies are at home at the fringes of language and have one foot squarely in the fertile ground from which new knowledge enters into existing conceptual paradigms, but they are also highly articulate.

21

A way of considering corporeal intermingling of senses is not as an array of sense data or competing voices, but according to Rajchman's reading of Deleuze, as a being of sensation. Again through this idea we stumble across the pre-reflective, and again, as will happen periodically, Deleuze is drawn into the discussion, sometimes to clarify, sometimes to provoke: "The being of sensation is what can *only* be sensed, since there precisely pre-exists no categorical unity, no *sensus communis* for it. At once more material and less divisible than sense data, it requires a synthesis of another, non-categorical sort, found in artworks, for example" (Rajchman 2001, 9).

It is the explicit reference to art that make his words both enticing and provocative, along with the suggestion that sense data has cohesion in the form of a being. Claiming that art is "non-categorical" in no way implies that it is nonintellectual, but that the web of the corporeal, sensual, emotional, intellectual, and social that informs the creative act is not a *de facto* reinforcement of existing categories. It is possible to interpret "categories" of understanding formally according to Immanuel Kant's *Critique of Pure Reason* or loosely in terms of social conventions and intellectual tropes, but either way, art has the possibility to be non-categorical through simply transcending or eliding categories. Rajchman reads Deleuze as saying that "artworks just *are* sensations

connected in materials in such a way as to free *aisthesis*" from shared structures of thought and judgment (ibid.). Once the aesthetic experience is freed from these structures, what happens? Does it remain blissfully unfettered by all things rational and cognitive? No, after the escape from thought, further thought emerges from the experience, even concepts, frameworks, structures of sorts, in a move that seems to be contrary to the fluid being of sensation, contrary to art, contrary to phenomenology. It is impossible to prevent thought from attempting to pin down experience just as it is impossible to prevent experience from blowing holes in structures that attempt to codify it. Merleau-Ponty knew this, and attempted to respect the being of thought and the being of sensation, hence the circle he described in which reflection and the pre-reflective enter into relationship, and his dynamic notion of hyper-reflection.

22 Hyper-reflection is a process of thought that takes into account its own functioning. Like the recognition in contemporary physics of the impact of the observer on the observed, another operation beyond the "conversion of sense experience into reflection" is necessary: "a sort of hyper-reflection (*sur-réflexion*) that would also take itself and the changes it introduces into the spectacle into account" (Merleau-Ponty 1968, 38). The circle of hyper-reflection can be so finely grained, in such tiny loops that it can be done in the midst of experience. A dancer who interrogates her movement phenomenologically in the very moment of dancing attempts not to let reflection intervene and shape the flow of movement but knows that it will change the process, perhaps by making it more conscious, providing more depth. Performing a hyper-reflection while moving does not have to halt the process of movement; on the contrary, both can function through a state of flux. Hyper-reflection is the vehicle by which concepts are drawn out of raw experience; they are sensed and intellectual connections are made, like partnerships between thought and action. This conceptual elaboration commences in the moment through hyper-reflection and then is developed across further stages, crafted into the very texture of the phenomenological document, whatever form it might take. The translation of *sur-reflexion* as hyper-reflection is unfortunate, particularly in the era of hypertexts and hyperlinks in which there is a sense that *hyper* means accelerated, as with Umberto Eco's coining of the term *hyperreality* (1986). According to Merleau-Ponty, this reflective dynamic could be described by the prefix "meta" or simply as "reflection from the midst"; it is an immersed and kinaesthetic reflection rather than unidirectional or once-removed.

This emphasis on the roles for the pre-reflective and the hyper-reflective loop in the process of phenomenology is important to a consideration of bodies and computer technologies for at least two

reasons. The first is that listening to the body is possible through an attempt to access the pre-reflective. This occurs, as Merleau-Ponty has demonstrated, even without positing a duality between body and mind. As we assess the artistic, social, and corporeal implications of developments in computational devices and ambient systems, we need to have a method and an intent to receive information from our own bodies and from the bodies of others. In giving voice to diverse corporeal states we can overcome naive distinctions between matter and spirit, between body and mind. The second reason for crafting a role for the pre-reflective is that it can open a way for understanding the deep entanglement between reflection and experience, between thinking and making, which is so important to many arts and sciences.



# RESONANCE

- 24 For whom is a phenomenology meaningful? If a phenomenology is written, what is the nature of its truth claim?

As a first-person methodology, a phenomenological description is received subjectively. As a purveyor of lived experience with the potential for new knowledge contained within it, one person's phenomenological account can be received by others within circles of shared truth. Truth according to this model may be objective and verifiable through repeated experiments, but it also may be entirely unrepeatable and subjective. The truth offered through phenomenology is better expressed as relevance, and the way it functions is described effectively by Gaston Bachelard in terms of reverberation, resonance, and repercussion: powerful words for being multisensory and fundamentally physical, of sound and vibration, inside and outside the body. If I read a phenomenology, or witness or experience a phenomenological piece of work, it has the potential to resonate within me on several levels: cognitive, emotional, and physical. That we are not a collection of monads, but live in worlds of shared and overlapping experience and cultural, social, and historical formation, means it is possible for one person's lived experience to shed light on another's world. The respect for subjective experience at the heart of any phenomenology does not sever one from others but can actually form a conduit to the other. Bachelard claims that only phenomenology can "restore the subjectivity of images" and "measure their fullness, their strength and their transsubjectivity" (1969, xv). He refers to poetic images, but an extrapolation to images in digital culture can easily

This is where the phenomenological doublet of resonances and repercussions must be sensitized. The resonances are dispersed on the different planes of our life in the world, while the repercussions invite us to give greater depth to our own existence.

—GASTON BACHELARD, *The Poetics of Space*

be made. The phenomenological impulse is to move from subjectivity to transsubjectivity. The phenomenological experience of another person unfolds across physical description with latent conceptual elements extrapolated and can be relevant to me based on my having experienced the same thing, or simply because I have the ability to construct meaning empathically, perhaps through imagination or previous experience. Quite simply, I can resonate with another's experience. According to Bachelard, first there is a reverberation, followed by the experience in oneself of resonances, and then there are repercussions in the way we see or feel the world. The poetic image "takes root in us" even though it originates from another, and "we begin to have the impression that we could have created it, that we should have created it" (ibid., xix).

25

Chapter 2 of this book, on telematics, contains a clear example of how one person's experience can resonate with others. A simple phenomenology I wrote based on performing in *Telematic Dreaming*, in which I described my experience as a performer in a low-tech "virtual" environment affected many people who had never encountered such technologies and who were not performers. What resonated with them, I believe, was that the description of the experience anchored abstracted notions such as the virtual body in concrete terms of shared human experience such as touch, trust, violence, and intimacy. To this day I continue to receive comments on this piece, as if it has taken root in the bodies of those who read it, not all of course, but some. This is a strong feature of resonance: sometimes it glances off, sometimes it reaches the core. Another example of this dynamic

comes from philosopher Don Ihde. In one of his books on situating phenomenology within the context of the philosophy of science and technology, he describes a simple exercise in which students are asked first to imagine and then to describe an experience with powerful physical qualities. It is not necessary for them to actually have had the experience. He does this exercise to determine the viewpoint of the observer/actor of the action, to determine whether they are seeing the event as a watcher or through the eyes of the actor. He observed that a large percentage of students described some aspect of flight or falling through air—a parachute jump, for example (Ihde 2002, 4). When I repeated this exercise with students I discovered the same thing, with half of the students watching their bodies falling as though watching a film, and the other half describing the sights and sensations as if they were experiencing them firsthand. Yet an equally revealing aspect of this exercise is that even though most of us had never experienced parachute jumping, falling, or flying, all of us did more than identify or empathize with the imaginary experience: we resonated with the description of it. Our assembly of senses, and our varied experiences of falling, gliding, jumping, or running, were integrated into an imaginary context that had emotional and physical sensory reality for us, or at least strong echoes of it.

26

The dynamic of resonance does not only address the question of shared truth by replacing it with meaning or, following Deleuze, relevance, but also can be used to consider the question of the origin of an experience. Does it matter where an echo originates? When approaching the question of origins, as with that of truth, existential phenomenology has had to crawl out from under the transcendental burden, the weighty implication that the goal of a phenomenological investigation is a kernel of undying, eternal truth—the origin of any experience, shared by all over time. Once more, turning to Bachelard, one can see the notion of origin re-scaled so that it refers to the origin of a poetic image within and through a being's creative consciousness: "Through this creativeness the imagining consciousness proves to be, very simply but very purely, an origin. In a study of the imagination, a phenomenology of the poetic imagination must concentrate on bringing out this quality of origin in various poetic images" (1969, xx).

Hence the origin of this or that poetic image becomes the fleeting moment shaped by the flow of time, memories, and corporeal insertion into being: the origin is an ontological freeze-frame within the current of experience, which reverberates outward and creates resonances in those who hear it. The origin of an echo can be seen as the point where we insert ourselves into its reverberation. And, equally significant, this point of origin relates not just to the moment upon which a phenomenology



is written or constructed, but is the moment it is received. The important attribute of phenomenology revealed by this consideration of resonance and origin is that it is not located at one point along a temporal spectrum: we may use a phenomenological method to create a work, but a phenomenology is fundamentally how we receive a work. If origins are located at any experiential moment along a spectrum of production and reception, then the body performing a phenomenology can be that of the artist or the audience, the critic, or the designer. For the most part in this book I emphasize the phenomenological process of one who makes and performs a work, but the act of making any work in any discipline is comprised of many small moments of acting and listening.

## CONNECTIVE TISSUE

- 28 Can a phenomenology take the form of a dance? of visual or sonic media? The question relates to how the act of hyper-reflection, where concepts begin to be elaborated in and through experience, is materialized into form. Most frequently it is written form, but the question raised is whether other expressive forms such as choreography, images, or music can also be phenomenological documents. Instead of approaching this question on a formal level (what shape it takes), a phenomenology can be investigated according to how it operates and how it is communicated. This shifts the question from essence to process, from a noun to a verb, questioning the dynamic process that generates a phenomenology and communicates it. The consideration of connective tissue transmutes the dynamic of resonance into a more physicalized metaphor and acts as a transition to the more complex idea of flesh from Merleau-Ponty, addressed in the following section. Resonance and connective tissue set the context for understanding flesh.

Connective tissue is a metaphor for understanding how a phenomenology can be communicated from one person to others. It helps to understand the communicability and externalization of immanence. In the previous section, it was suggested that a third way of understanding the pre-reflective was tomographical: as a transition from the externality of topography to the internality of tomography, this referred to the visual slices of the inside of a body obtained through the use of visual tomography. While tomography is effective at conveying the internalization of gaze and focus, it remains dominantly visual and linear—the slices, the body as slab of meat. Connective

Fabric is everywhere and always metaphorical in use—it could easily serve as an image of substance.

—JACQUES LACAN, *Écrits*

tissue, expanding the tomographic analogy, is nonvisual and nonlinear. It permits a way to think of both a physicalized notion of the pre-reflective and a means of communication of a phenomenology. As ever, what is sought is a dynamic and fluid approach to the construction and dissemination of thought, according to which a set of living, breathing notions, of experiences captured in media or in words will be constructed, transmitted, and then digested by others. When ideas are communicated there is a choice: we can preserve them in rigid taxonomies or present them like organic matter, like metaphors or temptations, inspirations that others may take on board to better understand, create, and communicate their own experiences. The ideas do not come after the experience, they do not come before, they permeate it like tendrils, like the web of connective tissue.

29

"Our bodies are made up of extraordinarily unstable material," wrote Walter Cannon in 1932, his words conveying the hint of an apology, when it is precisely this instability that can be celebrated. Connective tissue has proven to be a highly provocative living substance and poetic device providing physical, social, systemic, and philosophical relevance to the consideration of lived experience. Additionally it offers insight into the functioning of networks, relevant to human-to-human and computer-mediated human communication.

Connective tissue spreads throughout the body in a three-dimensional web without interruption, from head to foot. It surrounds and infuses all our organs and bones, down to the cellular level.



It extends from just below the dermis to surround and infuse muscles, bones, nerves, blood vessels, organs, and even cells. The deepest level of connective tissue is the craniosacral or dural, which encases the central nervous system and the brain. It is a bodily system implicit to both structure and neural functioning. It has been conjectured that if every structure of the body were removed except fascia, the body would retain its shape. The opposite is true. Human connective tissue, also called fascia or the fascial web, "so permeates the body as to be part of the immediate environment of every cell. Without its support the brain would be runny custard, the liver would spread through the abdominal cavity, and we would end up as a puddle at our own feet" (Myers 2001, 25). Significant to our consideration of human networks or communication channels between people is that in addition to keeping everything connected, connective tissue creates separation within our bodies. It creates space for nerves, blood vessels, and fluids to pass. This is a reminder that networks are not just ways for us to maintain connection; networks are ways for us to maintain distance, or difference.

- 30 Connective tissue is enduring but adaptive; it has maintained its general structure and purposes over the millennia. Its functions are evident in the earliest stages of multicelled organisms, in which two or more cells are able to stay in contact, communicate, and resist the forces of the environment. Yet despite this evolutionary lineage, it is not an autonomous meta-structure; it will organize along lines of tension imposed upon it and can produce bizarre and seemingly unrelated clinical results in adjacent areas of the body. The reason for this is that the fibers run in various directions so that they appear interwoven without one direction dominating. And here we finally get to the relevance of connective tissue to the pre-reflective: the fascia, which is a category of connective tissue, has been called, in therapeutic journals, "a potential space" and "an interstitial space."<sup>7</sup> Connective tissue is an embodied way of understanding not only the pre-reflective within us but also the means of communication within one body and between bodies. Those patterns of tension communicate physicality and affect, pain and peace, distortion and degeneration. They hold memory over time. Unpredictable, reshapeable, multilayered, affecting brain and body functioning, connective tissue is a fundamentally dynamic material and network. Language and the channels between people are material. They are like connective tissue—tensile fibers, material and immaterial, imaginary and real, connecting and separating people, and connecting and separating meaning from itself. Beginning to view our bodies and the spaces between bodies differently is the condition for reworking in a Merleau-Pontian way our understanding of thought, the communication of ideas between people, and the relation between physicality and ideas, between self and world. This reconsideration of

bodies and the spaces between them is also key to the reworking of phenomenology offered by this book. According to this reworking, bodies and the space between people are not simply matter or substance: they are connective tissue, electric and transforming, they are channels of communication. They are flesh.

There is a further aspect of connective tissue that acts a transition to the discussion of Merleau-Ponty in the following sections: it does not show up on X-rays, electromyograms, or computerized tomographic scans. It is an internality that is not accessible to these most prevalent forms of medical visualization.<sup>8</sup> As a space of potential, and as interstitial space, this network is quasi invisible. The way we encounter this morphable infrastructure of the human body is by touch, either the touch of another or of ourselves, or we sense it through movement (constriction or ease of movement, presence or absence of pain). As a living metaphor for the pre-reflective, it provides a dimensionality and torsion that the idea of tomography cannot; it is physical, kinaesthetic, and tactile. Previously I indicated that I would provide a series of approaches to understanding the pre-reflective, including linguistic, topographical, and tomographical. Here connective tissue takes the tomographical further into nonvisual, twisting, and tactile domains. As ever, a poetic corporeality underpins all consideration of the pre-reflective.

32 The following four sections offer fragments of close readings of Merleau-Ponty that contribute to the conceptual basis of the phenomenologies set forth in the rest of the book. Combined with the draft of a methodology offered near the end of this section, they act as the ingredients of a do-it-yourself phenomenology. The ideas from Merleau-Ponty's late work that I find useful in order to elaborate an encounter between bodies and technologies are flesh, reversibility, the invisible, and disequilibrium. This approach derives from an earlier project in which I developed a phenomenology of dance (Kozel 1994). Unexpectedly, the attempt to give voice to the lived experience of dancing bodies moving in space and time resulted in assembling a set of concepts that can shed light on the experience of the body engaged with technologies. In systems-design parlance, the extrapolation of Merleau-Ponty's late philosophy for dance offers conceptual affordances for understanding wider existential, social, and ontological implications of bodies living and working with responsive technological systems. First it is important to understand that computational systems are like art, and, in the words of Merleau-Ponty, "art is not construction, artifice, meticulous relationship to a space and a world existing outside" (1964a, 182). Technologies that employ visuals, sound, and haptics, like art, create a much more complex relationship between the inside and the outside, between bodies and the world.

Merleau-Ponty's idea of flesh is particularly significant to this book, which takes the perspective of the body engaging performatively with technologies, because the latent assumptions behind



Visible and mobile, my body is a thing among things.... Things are an annex or prolongation of itself; they are incrustated into its flesh, they are part of its full definition; the world is made of the same stuff as the body.

—MAURICE MERLEAU-PONTY, "Eye and Mind"

so much creative work with digital technologies across arts, software design, and engineering are those from first-generation virtual reality and cyberpunk: that the body is meat and that our goal is to create systems of greater and greater sophistication so that we can leave the meat behind. The allure of cyberspace has always been based on the Cartesian hierarchy of mind over body, and even though we have moved beyond much of that rhetoric from the mid-1980s and early 1990s, the implicit position remains to an alarming extent. It is time to reincorporate human computer interactions, and flesh is a good place to start. The body is a weave of different materialities, the body is a dynamic process, the body navigates the world at the intersection of a cluster of languages (verbal, physical, archetypal, mnemonic, unconscious). It is electric, biological, and cultural. The body is a pattern of information, and the body is both a site and a mapping onto sites. Above all, for Merleau-Ponty, bodies are flesh, and flesh is more than just bodies. Our bodies extend beyond ourselves through the operation of our senses and as such the boundary of the body, skin, is not a boundary at all. We are porous beings, and we are a part of flesh as well as being flesh. "All flesh, even that of the world, radiates beyond itself" (Merleau-Ponty 1964a, 186).

33

Flesh is a notoriously difficult concept to pin down in Merleau-Ponty; it slides into the discussion in different guises. There are times when it sounds metaphysical: flesh is "midway between the spatio-temporal individual and the idea, a sort of incarnate principle" (Merleau-Ponty 1968, 139); and instances when it sounds like it comes from pre-Socratic philosophers: "flesh is not matter, not



34 mind, is not substance. To designate it, we should need the old term 'element,' in the sense it was used to speak of water, air, earth, and fire" (ibid.). Consistent with his position regarding the pre-reflective as a region prior to the duality between subject and object, he indicates that flesh is "the formative medium of the object and the subject" (ibid., 147). In other words, flesh is pre-dualistic. In this sense it is important to stress that flesh is not just matter, skin, meat, or fat. The understanding of flesh builds on an understanding of connective tissue and a space of difference: "less a color or a thing, therefore, than a difference between things and colors, a momentary crystallization of colored being or of visibility. Between the alleged colors and visibles, we would find anew the tissue that lines them, sustains them, nourishes them, and which for its part is not a thing, but a possibility, a latency, and a *flesh* of things" (ibid., 132-133).

Flesh is my body, is others' bodies, and is the space between bodies; it comprises things, organic and nonorganic. As a notion it has been accused of harboring "a strange piety, tied up with a dream of originary experience" (Rajchman 2000, 8), but there is a fundamental practicality as well as a poetry in how I understand flesh. It is a conceptual and a material reworking of the *stuff* of my body and of things, and this lived materiality is what prevents flesh from simply being a transcendental dream. There is a generosity to flesh; it does not discriminate between animals and humans, and, significantly for a discussion of technologies, between humans and machines. In an enigmatic paragraph, Merleau-Ponty refers to flesh being applicable to other fields, where it is "incomparably

FIG. 8 above, *Other Stories*, 2007



more agile." Of course I am aware of the risks of interpreting beyond the cultural scope and context of a philosopher and his times, but I find Merleau-Ponty's thought uncanny for its mutability and prescience for encompassing the relations between humans and computers. When he writes that flesh is "capable of weaving relations between bodies that this time will not only enlarge, but will pass definitively beyond the circle of the visible" (1968, 144), I cannot help but let myself run with interpretations in the realm of what Katherine Hayles (1999) calls the "post human," enlarging upon his "time" by applying his thought to ours. Once more, relevance and resonance are in play, combined with a close reading of the words of the text. Flesh plays an important role in the phenomenology of wearable technologies offered in chapter 5, but here it is enough to see how his ideas are strangely evocative of the convergence between humans and technologies. What he sees as fundamentally paradoxical, that objects are "incrusted" into our flesh, takes on a literality once our current usage of devices, networks, and sensor technologies are examined.

35

Unsurprisingly, Merleau-Ponty's major concepts are entwined, or entangled across each other. Flesh is inserted into the relation between the one who sees and the thing that is seen, "the thickness of flesh between the seer and the thing is constitutive for the thing of its visibility as for the seer of his corporeity; it is not an obstacle between them, it is their means of communication" (Merleau-Ponty 1968, 135). This inserts flesh into the dynamic of reversibility, which is how we live in the world, and makes clear that "the flesh that one sees and touches is not all there is to flesh" (ibid., 144).



## REVERSIBILITY

36 The basis of the relation of reversibility in Merleau-Ponty is simple: it is that I can see and that I am also seen. I am both subject and object through the act of seeing. I see the world, but I also see my body in the world; with inspiration from great twentieth-century painters like Paul Cézanne and Paul Klee, Merleau-Ponty incorporates the idea that I see the world and the world sees me, objects look back at me. This is the "seeing-seen," and this dynamic helps rework the relation between bodies and media technologies by overturning the suggestion that the digital image is merely a visual representation of the world. His understanding of our relation to the visible was based on exploring how painters saw and transformed the world, and on how he received their paintings. He effectively offers a double phenomenology: an imputed phenomenology of the act of painting based on the words of critics of Cézanne and Klee and on their own words is combined with his phenomenological analysis of his own encounter with the paintings and with the landscapes in the south of France. The significance of this juxtaposition is that phenomenology is relevant to the creation and to the reception of work, particularly to the reception of interactive art where the public is more actively involved in shaping the experience.

The elements described by reversibility are diverse, ranging from the abstract poles of dualistic philosophical structures, to the human relations between individuals, to the relations between a person and one or more elements of the physical environment. Reversibility is a "dynamic," most simply understood geometrically as the shape of the infinity symbol or the Mobius strip where

The enigma is that my body simultaneously sees and is seen. That which looks at all things can also look at itself and recognize, in what it sees, the "other side" of its power of looking. It sees itself seeing; it touches itself touching; it is visible and sensitive for itself.

—MAURICE MERLEAU-PONTY, "Eye and Mind"

the exchange is in a constant sliding state along a twisting figure-of-eight. Emphasis is placed on the fluid and changing nature of the forces involved in this exchange as opposed to any tendency toward resting at any point along the way. Reversibility, which Merleau-Ponty also called "an extraordinary overlapping," or a chiasm, "forbids us to conceive of vision as an operation of thought that would set up before the mind a picture or a representation of the world" (1964a, 162). Vision is fundamentally embodied. I do not just see things or act on them, I am caught up in the world, and my vision and actions are affected by the people and things in my world.

37

Following quickly upon the realization that we are seeing and seen is his assertion that there is touch in vision and that we operate according to the touching-touch: just as I see and what I see sees me back, I touch and am touched by objects. "Since the same body sees and touches, visible and tangible belong to the same world" (Merleau-Ponty 1968, 134). There are three experiences of the touch: an active touching of the sleek and the rough textures of the outside world, a passive sentiment of the body and of its space by which I feel things touching me, and a touching of the touch. This latter is the touching-touch and is epitomized by the one hand touching the other: with one hand I touch the other but am in turn touched by it in a continuous sequence of encroachment and reversal. Sliding your hands across one another reveals the impossibility of isolating an instant where the right hand only touches and the left hand only receives the touch; touch always bends back on itself and that which seems to passively receive touch subtly, latently, covertly can be felt

to exert its own touch, touching that which touches. This conveys the truth of my rapport with the world such that the first two experiences of touch, the passive and the active, are moments entwined together. When the touching subject is touched, either by itself or by objects, it "passes over into the rank of the touched, descends into the things, such that the touch is formed in the midst of the world and as it were in the things" (ibid.).

A role for the tangible, the tactile, the haptic, is essential for any account of our physical encounter with digital media, given our increasingly computationally enhanced lives. Any conceptual framework we embrace to make sense of our lives amid technologies needs to have space for tactility, or even better, incorporate it in its very fabric. This subtle and complex dynamic of action and response will be offered in chapter 3 as a way of understanding responsivity in computational environments that provide more than simple one-directional, literal interactive choices. Constructing this argument relies not only on the combination of seeing and touch, but also on an extension to the Merleau-Pontian dynamic of reversibility into bodily movement. "It is by lending his body to the world that the artist changes the world into paintings. To understand these transubstantiations we must go back to the working, actual body—not the body as a chunk of space or a bundle of functions but that body which is an intertwining of vision and movement" (Merleau-Ponty 1964a,162).

38

Never a philosopher of stasis, Merleau-Ponty does address movement, but he does not quite go far enough. In previous writing directed more exclusively at dance, I extrapolated another dynamic to accompany the seeing-seen and the touching-touch: the dancing-danced. The dancing body is an intense example of the entwinement between identity and difference. Dance is an active exploration of that region where the subjective control over the body is at its limit. In this sense the dancer dances and is danced by the force that she sets in motion. The chiasmic relation of the dancing-danced reveals something to us as movers, and can be rendered more pedestrian by calling it the moving-moved, a subtle shift in perspective that supports the consideration of social choreographies in chapter 5. It is obvious that the dancer exerts strong subjective control over her limbs by virtue of the physical effort necessary to set her limbs in motion, but the momentum of any dance move is a created force that in turn animates the body in movement. The dancing-danced, or chiasm between moving actively and letting ourselves be moved by things, or people, or the world, is about expanding the space between control and being controlled. Space becomes tangible, sometimes assisting with the lift of a leg or an abrupt turn, sometimes resisting as though it were a leaden substance slowing us down. More than the rest of us in our daily patterns of



movement, the dancer mentally controls her body but also plays at the edges of control, letting physical momentum chart a path through space. The rigidly conscious subject withdraws and returns by degree; it can be more or less veiled, but never totally absent while shapes in space are carved and time and rhythm are played with. Combined with space, time takes on an ambiguous life force in the dancing-danced. With dancing as with all movement, time is not fully controlled. The dancer may intend to draw out a certain sequence, but often her body's own momentum and balance dictate otherwise. It is as if movement were determined by the temporality of the dance that is in the process of emerging, as if it were shaped by the space that thickens to slow the dancer or becomes even more liquid to let it get ahead of itself. Dance is the art of equilibrium giving way to disequilibrium. It is in the hiatus of equilibrium that time and space intervene, that the dance dances through the dancer.

The examples of sight, touch, and movement reveal that the relation of reversibility is "always imminent and never realized in fact" (Merleau-Ponty 1968, 147). It is impossible to overexaggerate the importance of the dynamic of reversibility in Merleau-Ponty's late thought. He thought it inside and out, and always returned to the unsettling truth that I see and am seen. The significance of this is a fundamental lack of stability within our corporeal insertion in the world, a dismantling of firmly set notions of subjectivity and identity, even of meaning. The body "is not a self through transparency, like thought, which only thinks its object by assimilating it, by constituting it, by transforming it into thought. It is a self through confusion" (Merleau-Ponty 1964a, 163). Without this overlapping, uncertain dynamic we would not really be flesh, we would not have the body of a human being, there "would be no humanity" (*ibid.*). The humanity is, paradoxically, achieved through a distance being incorporated into the self through the emigration into the outside. The potential for this to be incorporated into an ethical relation between self and other will be explored in later chapters on motion capture and wearable computing, but for now it is enough to understand that there is a losing of oneself in the chiasmic composition of touch, vision, and movement, a destabilization of identity that is fundamentally creative.

39

The resonance of reversibility is captured in the following words describing the way we perceive the world and others in it: "not to see in the outside, as the others see it, the contour of a body one inhabits, but especially to be seen by the outside, to exist within it, to emigrate into it, to be seduced, captivated, alienated by the phantom, so that the seer and the visible reciprocate one another and we no longer know which sees and which is seen" (Merleau-Ponty 1968, 139).

## THE INVISIBLE

40 The openness to paradox at the root of our corporeal insertion into the world leads Merleau-Ponty into more ontological territory regarding the relation between the visible and the invisible, the title of his unfinished manuscript. The invisible is one of his more obviously ontological concepts, meaning that through its relation with the visible, Merleau-Ponty attempts to explain the being of people and of things. More appropriately, the invisible is a placeholder, revealing that much of what we are cannot be fully revealed; quite like dark matter in the universe, the invisible is the glue or the lining of our worlds: "a certain hollow, a certain interior, a certain absence, a negativity that is not nothing" (1968, 151). If the invisible is seen as a sort of cosmological or transcendent force in Merleau-Ponty it can be a cause for concern, seeming to reintroduce an absolute into an existential dynamic, but that is not how I choose to read it. I read it materially, building on the previous discussion of connective tissue, and dynamically through the notion of disequilibrium in section 1.9. The invisible does not make sense on its own, but gives depth and texture to what we see. If we escape for a moment from the Cartesian xyz axes that shape our standard techniques for perceiving and representing depth, the invisible can be seen as a dimension that cannot be isolated from others but permits the existing ones to intersect differently, no longer at right angles: the warp in the structure.

The invisible is significant to digital media because it challenges the supremacy and the literality of vision. Visual input and output are dominant in digital media, with sound coming second, and haptics a distant third. Elevating the significance of some idea of the invisible helps transpose

The secret blackness of milk.

— MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

the consideration of media away from simplistic notions of moving images, such as visuals confined to images that appear on a screen in front of us, or on the wall of a cave by candlelight, and other favorite renditions of the ancient precursors to television and virtual reality. Merleau-Ponty acknowledges that there is "that which reaches the eye directly," the frontal, but also that which reaches vision from below ("profound postural latency") and from above ("of flight, of swimming, of movement"). Through these designations he introduces not only corporeal roots of vision but also kinetic and kinaesthetic qualities (1964a, 187).

41

It is important to state the obvious: first, that there is a reversible relation between the visible and the invisible; there can only be a visible for us because there is the invisible, which is the "lining" of the visible. And, second, that the invisible is not simply the nonvisible. Here is where it is useful to return to the understanding of connective tissue as an interstitial space. Just as connective tissue does not appear on scans or x-rays but is integral to our structures and our physical communication of pain and pleasure, the invisible is that which is possibly visible; it spans temporality by being what has been or what in the future might be seen, and it is transsubjective in that it is "what is seen by an other than me, but not by me" (Merleau-Ponty 1968, 227–228). It is an absence that matters. Literally, it is an absence with a sort of materiality (Merleau-Ponty 1964a, 187).



The invisible is a companion to any phenomenological inquiry, and it is a reminder of what we can and cannot achieve through any sort of reflection. The goal is not to render the invisible visible, to strip it of its obscurity in the light of presence and immediacy. "If coincidence is lost, this is no accident; if Being is hidden, this is itself a characteristic of Being, and no disclosure will make us comprehend it" (Merleau-Ponty 1968, 122). The idea of a domain (of knowledge, of memory, of being) that can never be fully coincident with our present existence is a reminder that through reflection in the style of Merleau-Ponty we never seek a full fusion, or a full comprehending of the known into the knower. This is important because Merleau-Ponty can be accused of extrapolating the flesh of the subject outward so that all otherness can be understood in terms of the singular. This could not be more inaccurate. There is always a slippage, always a "gap" (*écart*, Merleau-Ponty calls it), or, in more culturally resonant terms, there is always difference or even discordance between the memory and the present, the visible and my perception: this is the invisible. Taking the metaphor of the lining further and emphasizing that the relation between *the visible and the invisible* is "not a coincidence," not a fusion as of two positive terms, he calls the relation "an overlaying, as of a hollow and a relief which remain distinct" (ibid., 123). The invisible is close to our bodies. Yet there is a tendency to think that it is far from us, outside of us, residing in the past or in the core of another person, always remote. The invisible is intimate to our lived experience, it ensures that lived experience is not flat, that it has depth, dimension. It is not "an opaque stratum with which we would have to merge" (ibid., 124), and it points toward a breaking up, a noncoincidence and a differentiation that our philosophies must learn to accommodate. The invisible, or noncoincidence, is within us. It is corporeal, and this differentiation, this depth or darkness within the weave of perception, is, to use a particularly vivid example of Merleau-Ponty's language, a "dehiscence" that opens my body in two. Like a hinge allowing matter to fold back on itself, the action of dehiscence returns us to the reversible relation discussed earlier, the simple phenomenon by which I see and am seen, I touch and am touched. It is a reminder that things pass into us and that we pass into things (ibid., 133).

The invisible is extraordinarily difficult to write about. Perhaps it should be hummed, or danced, but if it were to be hummed it would be the tune that breaks off because we forget the rest, or if it were to be danced it would circle around an empty space. This is precisely what a phenomenology is about: never full disclosure, always palpating the visible and letting this gesture go beyond it. The invisible is a challenge for Merleau-Ponty's phenomenology. As a methodology for reflecting upon lived experience, it encounters something that is at the heart of the world, the invisible, and it stumbles; it is not entirely able to grasp or to analyze or to divulge it. Our visible world is "centered

on a nucleus of absence" and this absence exposes the limits of phenomenology, for how can one do a phenomenology of something that is hidden? He suggests that this becomes a phenomenology of the imaginary. The way our thought and language are constructed need an object, but what if this object were hidden, just outside the beam of inquiry, and revealed by remaining hidden? This becomes a phenomenology of uncertainty, of slippage or allusion. Of the *écart*, or gap, which poses the question of "the invisible life, the invisible community, the invisible other, the invisible culture" (Merleau-Ponty 1968, 229).

## DISEQUILIBRIUM

- 44 A line in a drawing of a body is like a nerve, it is a "certain disequilibrium" within a corporeal system; a body in dance is a constant negotiation between equilibrium and disequilibrium. Both line and body are alive, "unstably suspended between a before and an after" (Merleau-Ponty 1964a, 184-185). In this section several unstable concepts will be introduced as integral to the fabric of a phenomenology and of particular relevance to experimentation across bodies and technologies. Merleau-Ponty has often been criticized for being simply a "philosopher of the beautiful," by which we can understand the beautiful to be a pleasing and consistent state of unity, homogeneity, and oneness with the world and with our perception of it. The beautiful is pleasing, but it can also be lyrical, saccharine, and sentimental; the beautiful can be as doctrinaire as it is contained, and is particularly pernicious when it is applied to bodies. Objecting to Merleau-Ponty by saying he gravitates toward the beautiful is implicitly Kantian. According to Kant's "Analytic of the Beautiful" in his *Critique of Judgment*, "the sublime moves us while the beautiful charms us" (1987, 98n4). "The beautiful in nature concerns the form of the object," and this object is "bounded," which means that we are able to easily integrate it into our categories of understanding, reason, and judgment. The experience of something beautiful effectively reinforces our perceptions and conceptions of the world (ibid., 98). All is harmonious. Meanwhile, the sublime is found in formlessness or in an object that confronts us with "unboundedness." The sublime is a pleasure, but an indirect one, that is "produced by the feeling of a momentary inhibition of the vital forces followed immediately by an outpouring of them that is all the stronger" (ibid.). This is why the sublime moves us: we don't



The things began to move, color against color; they began to modulate in instability.

—MAURICE MERLEAU-PONTY, "Eye and Mind"

like it, but we are compelled and awestruck by it. It threatens us; in particular, it threatens our cognitive faculties. How can we contain and comprehend something that is sublime? The "mental agitation" produced by an encounter with the sublime is akin to "the power of desire" (ibid., 101). It is no wonder the sublime exerts such a hold over the imaginations of so many readers and writers of philosophy; compared to this state of awe and enervation, the "restful contemplation" caused by the beautiful seems positively soporific.

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In a culture of speed that believes it will sleep when it dies, even slow philosophical concepts have a difficult time. Let me save Merleau-Ponty from the judgment of being a philosopher of the beautiful, but not because I want him to seem speedy and dangerous. Relating to the earlier discussion of the reflective and the pre-reflective, the importance of the states of formlessness and disequilibrium associated with the sublime is that they do not simply reinforce the existing conceptual, social, and political status quo. Further, concepts associated with the sublime are dynamic and chaotic, they are fundamentally associated with movement, and my argument in chapter 5 locates them within and around the body. It is true that Merleau-Ponty has written highly beautiful, descriptive passages regarding our insertion into the world, but it is important not to be lulled by his poetic and sometimes lyrical writing style: there is profound discordance in his understanding of our embodied relationship with the world, particularly in the form of disequilibrium and the challenge to form posed by distortion or noncontainment. These notions are not significant for their abstract appeal

but because movement and corporeality can be read through them. When they are combined with other references found in his consideration of the embodied perception of the painter, we find a veritable crumbling structure of unstable concepts: disequilibrium, formlessness, mutation, vibration, movement, contingency, plurality, difference, discordance.

Diving into the pool, we can see the play across the beautiful and the sublime in Merleau-Ponty. An oft-cited passage describes seeing tiles at the bottom of a pool through the reflections of water and the ripples of sunlight. The water, "the aqueous power, the syrupy and shimmering element," reflects on the cypresses around the pool, making any reader who has ever admired summer sunshine on water feel an inner sigh of pleasure. Merleau-Ponty completes the moment by indicating that this "internal animation, this radiation of the visible is what the painter seeks under the name of depth, of space, of color (1964a, 182). This passage celebrating embodied vision and flesh is a clear example of Merleau-Ponty doing his own phenomenology of a moment of his experience, and through it we see concepts of the nonidentical, noncontainment, and distortion at the center of a highly beautiful experience. The pool exists both in the concavity in the ground and in the space above it, the ripples and distortions are not superfluous or distracting from a pure essence but are part of the perceptual integrity of the experience. These ideas contribute to an expansion of what can be called the sublime elements to a phenomenology of our corporeal existence in the world, and this expansion is particularly relevant to understanding bodies in technologies, and later to constructing an asymmetrical relationship with the other. The sublime is not significant simply because as our flesh becomes distorted and embedded with technology we become the sublimely tortured terminators, robots, borgs, or replicants that have peopled film and science fiction from the beginning of the twentieth century; rather, I am arguing for a more subtle understanding of the sublime based on material ambiguity and movement. This unfolds in chapter 5, where the sublime is replaced by the abject as a more appropriate designation of the vulnerability of corporeality in conjunction with wearable computing. The experience of using technologies in close proximity with bodies is fundamentally ambiguous because it can go in many directions: corporeal, spiritual, immanent, external, through memory, across dissolution, morphing, and transsubstantiation, backward and forward in time. This particular proximity needs a range of underformulated and highly poetic concepts to help explain it and to make links with the wider bodies of human knowledge and experience.

Formlessness is present in the release of form, the inability to ask the question "where?" and receive a spatial point as an answer, or to ask "what shape?" and obtain a fixed image. Merleau-Ponty captures the essence of this when he claims that in Cézanne's late watercolors the question "where?" is not to be asked, for space "radiates around planes that cannot be assigned to any place at all: 'a superimposing of transparent surfaces,' 'a flowing movement of planes of color which overlap, which advance and retreat'" (1964a, 181). This describes digital media, particularly imagery and sound, which often follow a dissolution and a redevelopment of form when they are rendered interactive. Since they exist in a constant state of transgression and restoration of shape, they cannot hold onto a fixed notion of form, or to a fixed point in space. The same is true of the body when it is represented in media, but also when it exists in entirely physical space: bodily shape gives way to bodily shape in our lives, and despite our materiality, physical states are fleeting and unsustainable. The human body simultaneously belongs to us and escapes us to the point that it becomes an ever-shifting thing at the same time as it is one's body. Paul Valéry has captured the dissolving dynamic that is my sense of my own body: "The thing itself is formless," he writes, "so much mine and yet so mysteriously and sometimes—always, in the end—our most redoubtable antagonist, is the most urgent, the most constant and the most variable thing imaginable: for it carries within it all constancy and all variation" (1964, 36).



## THE METHOD

One of the major obstacles between phenomenology in the classic texts of Merleau-Ponty, Heidegger, and Husserl and widespread acceptance in contemporary research circles is a lack of clarity concerning the conversion of theory into practice. Merleau-Ponty writes that "phenomenology is accessible only through phenomenological method" (1989, viii), but he does not inform us explicitly how it is done. It is easy for many to accept the need for a phenomenological approach, and to be seduced by its sensory appeal and embodied relevance, but again there looms the question of how one actually performs a phenomenology. How is a phenomenological epoché set in motion? How do we bracket the natural attitude in order to better understand the natural attitude? Varela, Thompson, and Rosch indicated that both Heidegger and Merleau-Ponty "stressed the pragmatic, embodied context of human experience, but in a purely theoretical way" (1993, 19). In a fine example of breathing life into phenomenology and presenting it to the scientific community as a method of research not remote from the experiments in the laboratory, they integrated its principles with Eastern philosophies and meditation practices. I will do something similar in this section, but I am compelled to offer the following reservation, or qualification: phenomenology lives outside of formulae and doctrine.

A series of instructions is provided here, but they are a fluid set of guidelines and starting points, like a recipe that gives the cook ample room to experiment, to go horribly wrong, or to come up with an amazing dish.<sup>9</sup> The process begins with observation, and as Pelli accurately observes, the act of choosing what to observe is terrifying: "Observing is an important intersection of art and science. It

The more you have extraordinary experience in flight, the more you recognize the difficulty in passing on the experience to others. Your experience becomes such that it is almost too difficult to talk about it. It seems useless to try to transmit the experience, it would be easier to send others on the flight itself.

—JAMES TURRELL, cited in Denis G. Pelli, "What Is Observation? James Turrell's Skyspace at P.S.1"

is the hardest part of science to teach. It is exhausting yet does not look like work. And it is terrifying to choose: Who am I to say what is interesting?" (2005, 4).

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Prior to outlining explicit instructions for performing a phenomenology, I find it useful to establish a context with some perceptually oriented questions and responses.

**Some wide-angle questions:**

How do we experience the world?  
 How do we understand our experiences?  
 How do we share these experiences?  
 What do they reveal?  
 How do they contribute to a body of knowledge or a shared discourse?

**A few responses:**

We experience the world through our bodies.  
 We understand our experiences by integrating data received through our senses with our structures for understanding.  
 We share experiences by refining their expressive form and disseminating them.  
 They reveal the nature of our selves, our bodies, and our cultures.



50 We express our experiences by integrating them into wider conceptual knowledge or by generating our own concepts.

**Some fine-grained questions:**

What do you hear right now?

What is going on in the back of your mind?

Are you experiencing pain or pleasure right now?

As you touch this book, does it touch you back?

**A few responses:**

No physical sense is isolated from the others.

Different layers of reflection and awareness occur simultaneously.

Our body speaks constantly but the channels for listening are usually switched off.

Conventional distinctions between subjects and objects can be called into question.

A phenomenology begins with a set of concepts and a set of starting points that are fundamentally akin to dance, theater, performance, and other dynamic processes for expression. It exists "as a movement before arriving at complete awareness of itself as a philosophy" (Merleau-Ponty 1989, viii). This is a useful way to acknowledge that the first moment of phenomenology originates in

FIG. 9 above, *Other Stories*, 2007





doing, but accompanying this doing is a weaving in and out of a line of thought, a line of questioning. The thought as it emerges is nonhomogenizing, and sometimes it goes quiet. In this sense it is different from normal analytic thought. In its first appearance in a moment of experience, thought is "a matter of describing, not of explaining or analyzing" (ibid.). This form of thought may not be familiar to the practitioner, and in this sense Varela, Thompson, and Rosch (1993) make an apt analogy with meditation: one has to learn how to use one's reflective capacities in a different way to meditate. It is not a question of severing all cognition to enter into a stupefied state, it is about creating a new way for cognition to coexist with inner and outer experience. In this sense, Merleau-Ponty could have been referring to meditation when he suggested that "phenomenology can be practiced and identified as a manner or style of thinking" (ibid.).<sup>10</sup> It is worth noting that dancers and actors in performance develop a particular style of using their thought as, once in movement before an audience, they enact a balance between entering into the flow of the performance, reacting and responding through the senses in real time, and fine-tuning their performance according to preestablished rules of configuration on stage, choreography, cues, emotional development, and of course the delivery of spoken text. Even most improvisation occurs within loose rules and the flow is about entwining a version of rational critical thought processes with the flow of movement, speech, and affect.

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FIG. 10 above, *Other Stories*, 2007

It is difficult not to get stuck in an implicit duality between thought and bodily movement, when this is not the intent. A brief digression on David Gelernter's consideration of high-focus and low-focus thought within the context of affective computing dislocates the duality while still providing a useful approach to differing ways of thinking. In Gelernter's attempt to determine how computers might be programmed to engage in analogical thinking, he located human thought processes along a dynamic spectrum. High-focus thought is analytic and linear and deals in abstractions: it is associated with wide-awake thought. Low-focus thought, such as that which occurs when one is tired, distracted, or on the verge of sleep, calls up cognitive events that include "affect linking," metaphor, and analogy until eventually recollection becomes indistinguishable from hallucination and is not far removed from dreams (Gelernter 1994, 19-21). He is interested in low-focus thought because he feels it is the catalyst for creativity and originality. It is also embodied. The flow and unexpected connections of low-focus thought are extremely relevant to the phenomenological process.

To use Gelernter's terms, what we do when we undertake a phenomenology is to peel away the high focus and spend some time engaging in low-focus data retrieval, which can be raw sensory data received immediately from the senses, as well as memories and imaginative constructs. Once this material is preserved in memory, or in a rough form of documentation such as video, notes, or sketches, we reintroduce some degree of the goal-oriented, high-focus cognitive functioning that we require in order to shape the material into a document for dissemination. "Abstract thinking emerges at high focus, and low-focus thought is concrete" (ibid., 22). This distinction is based on viewing the abstract as offering a *few* traits shared by *many* instances, and the concrete as including *many* traits based on *one* instance. While it is too reductive, this distinction can provide a sense of how a phenomenology becomes a play between the abstract and the concrete. Too much abstraction and the detail of lived experience is missing; the analysis is not a phenomenology. Too much detail and the phenomenology becomes either a shopping list of minutia or a subjective account that is best saved in a personal journal in a box under the bed.

A method for investigation has been characterized as having two main dimensions: a procedure for accessing the phenomenal domain, and a means for expression and validation within a community (Varela and Shear 2002, 6). Here is a method for doing a phenomenology of lived experience:

- Take your attention into this very moment.
- Suspend the main flow of thought.
- Call your attention to your body and what it is experiencing (are you short of breath, is your back hurting, are you hungry?).
- Witness what you see, hear, and touch, how space feels, and temperature, and how the inside of your body feels in relation to the outside. Are there others around you? What thoughts enter your mind once you suspend the main rational thrust? Register any seemingly trivial anxieties or thoughts but do not try to delve into their deeper significance at this moment. Let your mind wander and notice lateral associations. Your sense-data retrieval depends on your context. Do what seems appropriate. Spend some time getting in touch with your senses. Identify whether some dominate. Spend more time. Push beyond your boredom threshold and see what transpires. Notice whether any conceptual or high-level thought begin to take form, and register these but do not pursue them at this time.
- Take a break (a moment, a day, a week, a year).
- Describe what you experienced. Take notes, record sounds or images. Initial notes can be a sort of "brain dump." Do not worry about style, grammar, or relevance at this stage. This stage may occur immediately following your immersion in a specific sensory experience, or it may happen after an interval. Memory and imaginative reconstruction are involved regardless of the lapse of time between experience and documentation of the experience, but obviously too much time passing can dull the recollection.
- Take a break (a moment, a day, a week, a year).
- Reexamine your notes with an eye for what seems significant. Pull some of these out. Identify where there may be deeper conceptual relevance. This is tricky. You may find that your description of feeling worried about the time that this exercise took links with Paul Virilio's 1991 critique on the speed of technologically dependent Western cultures. You may have experienced something or thought of something that strongly refutes Virilio's ideas (or anyone else's). You may have come up





- Rewrite and redesign your own phenomenological process. It may need to shift for each different occasion you need it.
- Revisit, repeat, reiterate your process: the French word for rehearsal is *répétition*, and designers have their own processural term for the cyclical advancement of projects: iteration. In existential terms, I like to consider the phenomenological process as having a respect for living through, or dwelling within, an experience or set of experiences. Obviously if you are describing an event that cannot be quickly or easily or desirably repeated such as site-specific artwork or childbirth (Young 1998a) then sense data will be excavated through body memory and imaginative reconstruction. In contrast, art pieces created in controlled environments afford the option of revisiting and, ideally, spending time in the environment.
- A phenomenological document can range from the scholarly to the more poetic, and the document can be visual, physical, written, or spoken. It is up to you to select the most appropriate form for the context. A phenomenological account is evaluated less on formal style than on impact or effect. An effective phenomenology provides enough concrete detail to resonate with the embodied experience of the targeted group of recipients and combines this with a level of theory or conceptual engagement that lends the experience a wider relevance and potential for linking with wider thought. In other words, there is a play between abstract and concrete.

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Effective phenomenologies open paths between hitherto unprecedented combinations of practice and theory. They are therefore useful, or even essential, when groundbreaking work is undertaken that has not yet generated its own associated discourses and languages. This is the case with many innovations occurring at the interface between bodies and computers, and with many interdisciplinary ventures. Preexisting categories do not apply. New categories need to be invented, and these can only be derived by careful attention to the lived experience of the project. For "reason is just the endless paperwork of the mind. The heart of our creativity is our direct experience and the salience that our limbic brain gives it. Allowing it to be that does not stop us from overlaying rational considerations on it—after which we can talk, recount, explain, interpret, and analyze to our heart's content" (Cytowic 1995, 9.4).

# HETEROPHENOMENOLOGY

This section addresses an increasingly important question relating to first-person methodologies such as reworkings of phenomenology. In short, can I do a phenomenology of another person's experience? These questions relating to voice and experience have been addressed by ethnographers and anthropologists. Here I pose similar questions from the perspective of philosophy and embodied lived experience. I have spoken of the tensions between first- and third-person methodological approaches to experience. Here I stretch phenomenology to inquire into the possibility of speaking from the second-person perspective. Dennett and Varela have different approaches to this posture of inquiry. Dennett coined the term *heterophenomenology* in 1978, and although I am more inclined to follow the spirit of Varela's approach I use Dennett's term because I like the juxtaposition of the two terms, hetero for difference, and phenomenology because it preserves subjective experience. Dennett introduces this methodological perspective with "fanatical caution" because he sees the difficulties of trying to piece together a "neutral path leading from objective physical science and its insistence on the third-person point of view, to a method of phenomenological description that can (in principle) do justice to the most private and ineffable subjective experiences, while never abandoning the methodological scruples of science" (1991, 72).

The heterophenomenologist is a situated researcher such as an anthropologist studying a remote culture, who interprets what is seen but adopts an intentional stance of neutrality, or detachment. This method "neither challenges nor accepts as entirely true" what is learned from the subjects.



The term is ominous; not just phenomenology but heterophenomenology. What can it be? It is in fact something familiar to us all, layman and scientist alike, but we must introduce it with fanatical caution, noting exactly what it presupposes and implies, since it involves taking a giant theoretical step.

—DANIEL DENNETT, *Consciousness Explained*

Dennett recommends a "constructive and sympathetic neutrality" (ibid., 83). The intention of critical distance and unbiased interpretation is key, despite the researcher being present as a situated individual. Dennett's description of the role of the heterophenomenologist downplays the visceral connection with the other, but a Merleau-Pontian perspective would have to acknowledge that it exists. He is still reading through the body but is attempting to filter the results more rigorously, or to choose a style of language that intends to sound more "objective." In Merleau-Ponty's terms, he downplays the thickness of flesh that mediates the communication between the heterophenomenologist and the other whose experience he describes. Varela and Shear assert that the differences among first-, second-, and third-person methodologies are not evident in terms of the content they reveal as much as in the manner in which they appear, in particular, how the researcher is "inserted into the network of social exchanges" and how the research is validated (2002, 9). They do not hold to the necessity for the second-person researcher to be distant from those researched. In fact, contrary to Dennett, they believe that the strength of the researcher is precisely the ability to give up the guise of detachment and to understand the source. In very Bachelardian terms, they write that the researcher is an "empathic resonator with experiences that are familiar to him and which find in himself a resonant chord." Although some degree of critical distance is required, the intention is not that of a neutral observer but "to meet on the same ground, as members of the same kind" (ibid., 10). In particular they indicate that sensitivity to another's "phrasing, body language and expressiveness" is integral to this sort of second-person methodology.



An excellent example of a second-person phenomenology with all its implicit paradoxes is provided in the research into dancers by Finnish researcher Leena Rouhiainen (2003), also a dancer. In short, her research brings to the fore this most crucial question: can I do a phenomenology of someone else's experience?

Presenting a phenomenological interpretation of someone else's experience is based on two realizations: the first is that phenomenological philosophy provides the conceptual framework and methodological sketch for interpreting the experiences of others; the second is that the sensibility and interpretive power comes from the physical experience of the phenomenologist, in this case the second-person phenomenologist, or heterophenomenologist. I have taken the liberty of using Dennett's term even though I do not reproduce his concerns for neutrality and detachment. Quite the opposite: the version of heterophenomenology I present here precisely relies upon shared experience, or some degree of empathy.

The act of doing a phenomenology of another person's experience is both disturbing and intriguing. It is disturbing because it is a sleight of hand. We expect to hear the physical experiences of the one who speaks or writes, but instead we hear of others' experiences. It is further disturbing because we wonder of the agency or the voice of the others: are they silenced? are they well represented? how can we ever know? It is intriguing because it amounts to a slice of shared knowledge,

FIG. 11 above, *trajets* video shoot, 2005

a morph of the lived experience of two people because the originator of the experience is trans-substantiated through the one who produces the phenomenological document, and thus the experience becomes filtered through two bodies. The perceptible, says Merleau-Ponty, "can haunt more than one body" (1964c, 15). Rouhiainen echoes this sentiment when she confesses that she never completely grasped what her interviewees meant. She writes of understanding the contents of the interview material only in a manner that is meaningful to her, indicating that this relies on her "pre-conceptions of the spoken issues as well as the meaning of the words used" (2003, 68).

Other people are not "fictions with which I might populate my desert"; instead, they are "my twins or the flesh of my flesh" (Merleau-Ponty 1964c, 15). Merleau-Ponty writes that when one tries to understand *oneself* the whole fabric of the perceptible world comes too, including *others* who are caught in it. One can say that the opposite also occurs, that in an attempt to try to understand the experience of *others*, the fabric of *one's* perceptible, intelligible world comes through. There can be no duality, it collapses under the reality of our intersubjective lives. A heterophenomenology is an entwinement of doing a phenomenology with applying a set of phenomenological philosophical concepts, and as such it recognizes the dual strengths of phenomenology: it is both a practice and an array of philosophical concepts.



The classic question of striking a balance between the personal and the social, between a first-person methodology with individual relevance and how it may have relevance to a wider community, can be further addressed by looking to social geographers for understandings of relational space, heterogeneity, and affect. This is done in greater depth in chapter 5, where wearable computing and locative media are seen to produce social choreographies. If I do a phenomenology, others may or may not resonate with it. This puts me in a place of negotiation, or means that I am playing across registers of affinity, or, in the words of geographer Ash Amin, I engage in a "politics of propinquity." "If places (localities, regions, nations) are necessarily the location of the intersection of disparate trajectories, then they are necessarily places of 'negotiation' in the widest sense of that term. This is an important shift that renders deeply problematical any easy summoning of 'community' either as preexisting or as a simple aim" (Amin, cited in Massey 2003, 6).

60 It is too easy to fall into a defensive mode regarding first-person methodologies, assuming that their counterparts, the methods of scientific discourse that try as much as possible to efface the internality of the researcher in the interests of the objectively external, exist within a community of ease and accepted truth. This obviously is not the case. All knowledge is hotly disputed or is a site of conflictual negotiation. Geographers can help ground basic questions of truth for philosophy: when we ask about the truth claims of first-, second-, and third-person perspectives and get into a struggle over whether something is true for me, for a small group, or for all, a geographical perspective provides a way around these circular questions by situating the argument in terms of place, space, and those who live there. Dismantling the simplistic binary between local and global is a way to start. The global is associated with space, capital, history, and agency, while the local is linked to place, labor, and tradition, women, minorities, the poor, and local cultures. Like first-person methodologies, the local is often dismissed as emanating from a bodily state, not simply a reasoned, intellectual position. Yet these small players are in fact agents in globalization, if a different perspective is adopted and globalization is thought of in terms of genuinely relational space and "the multiplication, and diversification, of speaking positions" (Massey 2003, 10-11). Curious parallels can be drawn between the relevance of individual phenomenologies and conceptions of space and place as they are reworked by contemporary geographers. It is no longer useful to think in terms of me versus others, just as it is not helpful to think in terms of located place versus abstracted space. Massey asks: "If the identities of places are indeed the product of relations which spread way beyond them (if we think space/place in terms of flows and (dis)connectivities rather

than in terms only of territories), then what should be the political relationship to those wider geographies of construction" (ibid., 11)?

Most significant, we see that there *is* a relationship between the concrete identities of place and those wider global geographies. This question, transposed into the terms of this chapter on phenomenology, becomes: if my *phenomenologies* are seen in terms of flows and (dis)connectivities rather than simply the self/community divide, then what is my relationship to that wider set of lives and experiences? If it is assumed in advance that there is a relationship, rather than assuming that there isn't, then we get to explore it further rather than worry over whether it exists in the first place. Global space, like objective knowledge, is no more than a "sum of relations, connections, embodiments and practices" (Latour, cited in Massey 2003, 8).

## SEXUAL DIFFERENCE

62 If this expansion and reworking of Merleau-Ponty's phenomenology is, as previously indicated, an "unavoidable necessity" and a creative and political imperative, it is worth asking whether this is a feminist impulse. Is this book offering a feminist phenomenology?

My inclination is to say that this book is not sketching out a feminist methodology, but when I ask more specifically where my words come from, when I look into my motivation and formative influences, I see in my very pores the incredibly rich and provocative French feminist writing from the late 1970s, 1980s, and into the 1990s.<sup>11</sup> At the same time as hesitating to call what I do feminist phenomenology for fear of narrowing its scope or prefiguring an agenda; I am convinced that the presence of women's bodies (mine, but also those of collaborators and coperformers) in the thought, experiences, and perceptions at the basis of this book needs to be acknowledged. Just as a body is not universal, it is neither neutral nor asexual. Luce Irigaray makes a simple conjunction, a marriage almost, between scientific paradigms that rely on the stance of the neutral, supposedly universal, subject of knowledge and the masculine imaginary: "it is—ethically—essential that we ask science to reconsider the nonneutrality of the supposedly universal subject that constitutes its scientific theory and practice" (1993, 121). She calls this approach to affirming the nonneutrality of bodies and language "sexual difference."



Sexual difference would constitute ... the production of a new age of thought, art, poetry, and language: the creation of a new poetics.

—LUCE IRIGARAY, *An Ethics of Sexual Difference*

It is possible to argue that the acts of offering, validating, exercising, and teaching first-person methodologies like phenomenology, methodologies that provide room for corporeality, poetry, and subjective experience in a research domain, cannot be anything but feminist. I prefer to say that rather than being feminist they emerge from a place of sexual difference. Sexual difference, an important term in feminism and philosophy, is not about maleness and femaleness as much as it is about allowing the embodied, material voice of an other to exist alongside dominant discourses and practices. The Lacanian psychoanalytic framework that informed Irigaray's thought located women outside of language and the male symbolic order, but it is not necessary to labor over Lacan to see the relevance of sexual difference for research in the area of bodies and technologies. Careful readings of Irigaray see her as providing space for dissenting views by acknowledging that "the body is a mobile site of difference" (Chanter 1995, 46).<sup>12</sup> Consistent with the phenomenological orientation of this book, and with an articulation of otherness and ethics that gains momentum as the book progresses, sexual difference attempts to recognize the possibility of other viewpoints, other voices, other lives, all grounded in embodied experience and perception. An other voice can be that of a dancer among software developers, just as it can belong to an engineer in the midst of visual artists. Tina Chanter reminds us that Irigaray "does not restrict the scope of her question to women's differences from men, she also introduces the question of how to think sexual difference in terms of absolute alterity or radical otherness" (ibid., 173). Speaking from a position of sexual difference is more constructive if it is done without reopening the argument over sex and gender.

for it does not make sense to reduce maleness and femaleness exclusively to biology, or to say they are entirely determined by cultural performances of gender and identity: maleness and femaleness are biological and cultural, and these designations are multiple in themselves.<sup>13</sup> The advantage of reconsidering sexual difference once the existential and conceptual terrain embraces the enfolding of human and computer, of organic and technological, is that defining our sexuality as either natural or cultural seems reductive and, quite literally, out of touch. We are in the domain, to use Haraway's words, of "mixed literacies and differential consciousnesses that are more faithful to the way the world, including the world of technoscience, actually works" (Haraway 1997, 3).

64 Consistent with the transformations enacted by technologies on our bodies, lives, and modes of communication, sexual difference asks that we reconsider our assumptions behind the constructions of space, time, and matter (Irigaray 1993, 7). Women uphold the "elsewhere of matter" in Irigaray's terms; they make visible what was supposed to remain invisible according to a masculine logic. Without realizing it, when I plunged into performing with technologies in the early 1990s, I plunged also into a set of pretty rigidly defined notions around the body and what computers could offer to society, notions that had value judgments embedded in them: that it was desirable to leave the meat behind (Gibson 1984); that an uploading of consciousness and the amazing worlds through which one could travel in virtual space awaited us with a few more years of technological advancement (Moravec 1988); and, of course, that the body was obsolete (Stelarc 1984, 1995). The assertion that the body was "seduced and abandoned" was the ironic, but all-too-literal vision of the future at that time.<sup>14</sup> I was drawn to the alleged fluidity of virtual space, and was willing to experience an expansion and distortion of 3-D space to see if I might really leave my body behind; instead, I discovered that my body persisted, but differently. The divide between matter and consciousness, with digital technologies situated on the consciousness side of this pernicious Cartesianism, was what truly no longer fit either theoretically or experientially. This was what my sexed, gendered, and fundamentally curious body brought to the debate.

In the words of Irigaray (1985), I experienced the persistence of 'matter,' but also of sexual pleasure. Sexual pleasure may be accounted for through the technocultural lens of cybersex, and in the early 1990s this was one of the very few paradigms for considering women's bodies in the context of digital communications technologies, but the real sexual significance was that my discoveries concerning the many ways virtuality was actually a materiality were rooted my body and that I am a woman.<sup>15</sup> There was, at that time, almost no public articulation of discursive and physical

experiences that did not coincide with the standard rhetoric around technologies and virtual reality. This echoed the cover-up identified by Irigaray of the feminine in language and symbolic structures, and this is where the philosophical basis of sexual difference coincided with my practical experience: that of speaking from a position outside of language, speaking from a position of the relatively "unthought," or inserting the voice of the other into discourse (Whitford 1991). Sexual difference means speaking from embodied materiality in order to construct an alternative perspective that is not just a variant of the same; Irigaray holds out for radical difference, whereas I'm happy with the articulation of any differences at all.

Working in this hybrid field of performance and responsive technologies over the years, I have been excluded, embraced, tokenized, fetishized, treated as a freak or a visionary, desired, owned, dismissed as irrelevant or as obscure, deemed ahead of my time or to have entirely missed the point. My experiences are not unique: they are shared by women, and more than a few men, who are passionate about this area of research. In choosing to answer the question of whether this book offers a feminist phenomenology by suggesting instead that it comes from a place of sexual difference, I am not negating feminism. I still regard myself as a feminist and see this as a shifting state rather than a category or a club, but a phenomenological practice has to be able to reach behind biases and assumptions, even the worthy ones such as those sustaining feminist politics and thought. This is what allows us to question existing structures of being and knowledge while maintaining the scope for transformation. The philosophical approach of sexual difference is "thoroughly entrenched in the phenomenological insight that the body is always already a 'lived body'" (Chanter 1995, 129), and that our bodies are "multilayered structures" living within wider cultural multiplicities (Braidotti 1994b, 125). The attention to embodied materiality allows us not only to scrutinize inherited assumptions around bodies and technologies, coming from the military, industry, medicine, and popular media, but also to scrutinize the assumptions made by ourselves, by feminists (Chanter 1995, 129, 46). The decision to write through my experiences as a dancer and as a woman, questioning the materiality, perception, ethics, flesh, and affect of computational systems, may or may not coincide with feminist agendas, but it certainly comes from a place of sexual difference where maleness and femaleness are not erased but are filtered through layers of embodiment and difference.



## PERFORMANCE

66

The paradox of performance, as a set of actions and as a concept, is that it manages to capture a creative, even utopian, potential for transformation at the same time it evokes a straitjacket of conformity to codes and productivity quotas. Do we perform to express ourselves or to keep up with externally imposed expectations? Like a glimpse of a fantasy world, performance can bring to life a person, idea, or story, but in capitalist economies performance is a stick held over the head of both disenfranchised and highly regarded workers; as Jon McKenzie indicates, "Perform—or else" becomes the dictate of "the emerging performance stratum" (2001, 19).

Economies perform, cars perform, computers perform, animals perform, actors perform, and all of us perform in our lives, which is to say nothing of what we do in our imaginations and dreams. Performance does indeed have the power to ignite, not just spaces, but also an ontological substratum of being. Fundamentally, performance is not only about *acting* differently, but also about *being* different, or existing in an emergent state. It is not about inserting a splice between reality and fiction; it is about their deep entwinement. An example of this is one of the most liberating but also contentious contextualizations of the act of performance: the construction of gender. Gender is performative. Identity is performative. This means that I can wake up and—by means of intention and attention, not to mention judicious use of wardrobe, gesture, and language—have a different gendered identity in the morning. This is not a facetious argument. The convergence of ideas of performativity and fluidity within discourses around identity, gender, sexuality, culture, and ethnicity

The stream, the slender silent stream with its singing arms, the blood flow in the veins between the bodies, the wordless dialogue from blood to blood, with no sense of the distances, the magic flux full of silent words flowing from one community to the other.

—HÉLÈNE CIXOUS, *First Days of the Year*

permits an escape from canons of all sort (Butler 1988, 1990; Braidotti 1994a; Diprose 2002). Rosalyn Diprose summarized the argument neatly: "Identity is actualized as it is performed, rather than being caused by an inner essence identity is open to disruption." Hence, identity becomes "parody or imitation without an authentic original (2002, 67). The self becomes nothing but performance, which is not to say that the self is nothing. The impact of this argument is not just discursive: performativity as a daily repetitive practice permits breathing space within, and movement across, social codes and conventions. The pedestrian is as important as the virtuosic. Brian Massumi's modest assertion that the "plain, old, everyday self is an actor playing an ordinary role in the ordinary way" (2002, 48) can be reconciled with a growing momentum in geography, psychogeography, and urban studies toward seeing space as relational, places as negotiated, and both as contingent upon the moment by moment construction of multiple embodied selves.<sup>16</sup>

67

There inevitably occurs a tension between performance as construed through the arts and performance as it is relevant to the social sciences. This is unfortunate, not just because in the eyes of non-theater people performance is frequently deemed to be brittle or false, but also because in the eyes of many actors and dancers performance is seen to espouse movement that is somehow better, more skilled, or more meaningful than everyday actions. There is a snobbery and a reverse snobbery to contend with, not to mention an uncomfortable duality between the real and the theatrical, inviting a divide between the real and the virtual—something this book works to dismantle.

This divide is tedious and, some might say, overstated, particularly in light of the celebration of pedestrian movement that characterized much influential postmodern dance and the work of sociologists and anthropologists of dance (Banes 1987; Thomas 2003). Still, it reflects ongoing struggles in the framing of performance and nonperformance. I will turn briefly to two views before offering a working definition of performance relevant to the phenomenologies in the chapters to follow.

68 Theater director and performance theorist Richard Schechner takes an anthropological or "broad spectrum" approach to performance and argues for it to embrace a continuum of human actions, "from ritual, play, sports, popular entertainments, the performing arts (theatre, dance, music)" to the more easily overlooked performances of "social, professional, gender, race, and class roles, and on to healing (from shamanism to surgery), the media, and the internet" (Schechner 2002, 2). It seems as if his position maps onto that of many geographers and cultural theorists, but there is something kept in reserve, a small terrain held apart from the rest, distinguishing his view from the assertion that everything is performance. This is typical of theories of performance offered by people involved in dance, theater, and music: a willingness to expand enormously the definition of performance but a desire, almost an instinct, to hold something back, to refrain from saying everything writ large is performance. I situate myself in this group. Schechner does this by means of a clever move that relies on a distinction between theory and practice. He indicates that from the perspective of performance theory everything is a performance, but from the perspective of cultural practice some actions are performances and others not. And this varies from culture to culture (ibid., 30). His distinction relies on the pivot between *is* and *as*: there are limits to what is performance but anything can be studied, or framed, as performance. The *is/as* pivot is significant also to an account of performance and interactivity offered by David Saltz. In his essay "The Art of Interaction" (1997), unique in its time and still so today for being one of the few in the area of performance theory to address interactive digital media, he asks whether all interactive computer art is by definition a performing art. His argument hinges on performance being constituted by actions performed before an audience: "If we accept 'performing for an audience' as the distinguishing characteristic of performance, it follows that all staged interactions are performances, and all participatory interactions are not." He goes on to acknowledge that audiences sometimes become part of the interaction, at which point the scope of performance is extended only insofar as "interactors perceive their own actions to be aesthetically significant" (ibid., sec. II). Here again, the *as* plays a role: if people see their actions as aesthetically significant, they are performing.



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Performance cannot mean everything. Much as I embrace the arguments for performativity of gender and everyday life, this book is premised upon the idea that the dance studio acts as a focused environment for understanding the use of technologies in everyday life, and that somehow the conceptual and experiential infrastructure of our relations with technology are condensed and intensified in a performance context in the lab or studio.<sup>17</sup> Further, these experiences are seen to resonate, in a more diluted or disseminated form, in the wider world. My approach to performance is adjacent to those of Schechner and Saltz but relies on the Merleau-Pontian dynamics of reversibility and hyper-reflection. The framing, or *as*, is internalized. Performance entails a reflective intentionality on the part of the performer herself, a decision to see/feel/hear herself as performing while she is performing, a decision to see/feel/hear others performing while she watches them perform.

In these overtly phenomenological terms, either the performative moment is initiated by the desire or intention to enact a reflective chiasmic loop, or this state of attention can simply arrive, unbidden. Suddenly I am aware of what I am doing while I am doing it, and I modulate my voice, gestures, stance. This can happen in a way described by Roland Barthes, when he suddenly feels himself observed by the lens of the camera and "everything changes" as he "instantaneously make[s] another body for himself" (1982, 10), or it can be the gentle adjustments we enact to make a colleague or child feel more comfortable, toning down our voice or brightening our mood. Performance can be very subtle. The key is that we are aware of what we are doing while we are doing it. The simple split focus that this describes can occur under the highly charged circumstances of performing onstage before hundreds of people, or it can be a simple awareness of oneself walking down a city street in a funny hat. This is not antithetical to a state of flow, a state of undistracted consciousness that appeals to many computer interface designers at present,<sup>18</sup> but is based on a recognition that we are more likely to have fractured states of consciousness and that this need not be disruptive to performance. Bluntly stated, we can do more than one thing at once, think from more than one position at once, and our identities and body states can be in flux even on a microlevel without depleting our quality of life or thought.<sup>19</sup> McKenzie's post-Foucauldian discussion of performance identifies it as an "emerging stratum of power and knowledge," and while his assertion that performance is to the current time what discipline was to earlier centuries is contentious and compelling, his description is introduced here because it effectively captures the networked fluidity of performance: "We realize that the mechanisms of performative power are nomadic and flexible more than sedentary and rigid, that its spaces are networked and digital more than enclosed and physical, that its temporalities are polyrhythmic and non-linear, not simply sequential and linear" (2001, 19). Performance is complex



and distributed across temporalities, networks, and bodies of all sorts. This addresses a problem Diprose posed regarding arguments for the performativity of gender: "that performance could be so free is itself suspect" (2002, 68). The performance of gender or identity is never singular; we can never posit the construction, even fluid, of one body without an indication of its formation through intersubjectivity and through wider networks.

Each moment I challenge my corporeal map, shift it somewhat, repattern it. This is done by means of intercorporeality and embodied perception. When I perform I am aware of inserting myself into a context, almost an inhalation and an exhalation. Performance is never one-directional, never simply exposition from my body outward, and this is where Merleau-Ponty's dynamic of reversibility comes to bear: performance involves the awareness of being in a state of reception and initiation between inside and outside, modulation and response. The slight dislocation achieved through hyper-reflection yields the potential for transformation; like a hiatus (or, as Merleau-Ponty would say, *écart*) it allows for an adjustment of action while in the flow of action. It is important for this not to be seen as a binary flip between thinking and doing—there is an entwining of action and awareness. It is in this sense that phenomenologies are performed: "Reflection is not just on experience, reflection is a form of experience itself" (Varela, Thompson, and Rosch 1993, 27). Further, this permits scope for ethics within performance, diffusing the implicit critique that performance is fundamentally narcissistic.

This book slowly elaborates an intercorporeal ethics that embraces bodies and technologies, but for now it is sufficient to indicate that "my exposure—both corporeal and sensible—to the other" can be the basis of ethics (Critchley 2002a, 18). Ethics is not about laws, judgments, and rules; instead, it shifts and moves through my encounters with others. Ethics is performed in the moment. Simon Critchley, writing on Levinas, indicates that ethics is about a dynamic "saying" not the static "said." This, again, is an assertion of the *as* over the *is*. "It is the performative stating, proposing or expressive position of myself facing the other. It is a verbal and possibly non-verbal ethical performance, of which the essence cannot be captured in constative propositions" (ibid., 18). When we perform we mediate inner and outer. We translate, we regulate, we discover, we get surprised, angry, fearful, hurt, exhilarated. If we create responsive relations with others and our environments that transcend language, then by means of intentional performance with technologies we can regard technologies not as tools, but as filters or membranes for our encounters with others.



By now it may be clear that the performances animating this book are not set scripts or choreographies, but are more akin to forms of improvisation. Geographers Nigel Thrift and Ash Amin describe the city as made up of a repertoire of embodiment taking shape as "a forest of hands," "a cacophony of talk," and bodily improvisation. Improvisation is not simply the "refuelling of learnt behaviour," it is a performative embodied practice, "a partial and temporary resetting which consists of attempts to make something new in the moment" (Amin and Thrift 2002, 85-87). Above all, performance is not about display. It is attention, perception, and thought set in motion in such a way as to kindle, or ignite, the space for change.

## TECHNE / TECHNOLOGIES

It is a challenge to include a short section on technologies in a long book that is entirely about the body in conjunction with technologies, because it is not clear what purpose it will serve. Providing a general survey of technologies is of limited use because the terrain is very broad and largely context-determined, whereas specific configurations of technologies (telematics, motion capture, responsive architectures, and wearable computing) will be explained in the following chapters through phenomenological descriptions of projects. Still, it remains important to provide, if not exactly definitions, at least orientations to terms that pervade our lives; words like technology, the virtual, and performance are used in multiple contexts with multiple meanings with the vague assumption that we all know what we mean when we say them. This is far from the case. Like the many shades of green each of us sees in a landscape, these words are imbued with tinges of meaning from our lives and histories, personal and collective. This book aims to provoke an understanding of technologies that permits the shades of green and lets the meanings vibrate around our experiences with technology; as such, this short section views technology through the lenses of techne and technique.

Martin Heidegger's writings on Being and technology are used increasingly to problematize or to illuminate practices in the broadly construed domain of computational art. Narrowing the scope somewhat, his construction of techne is considered as follows in the light of the development of physical vocabularies and implicit body narratives emerging through attentive sensory relationships

What I'm saying is that you have to think about technology, you have to use it, because in the end it is in your blood. Technology will move in and speak through you, like it or not. Best not to ignore.

—TIM ETHELLS, *Certain Fragments*

And art was simply called techne.

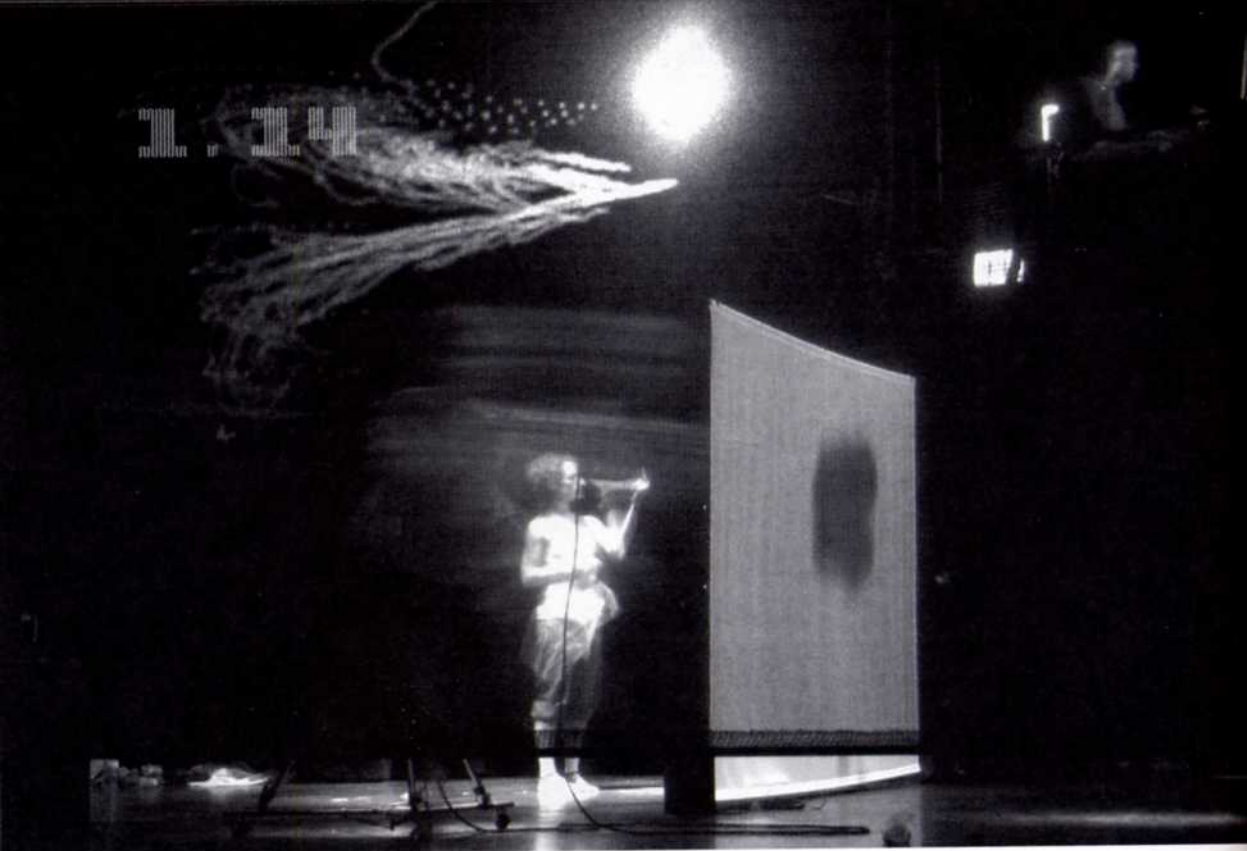
—MARTIN HEIDEGGER, "The Question Concerning Technology"

to oneself and others in responsive computer systems.<sup>20</sup> This might be called a visceral approach to technologies and to Heidegger. I'm letting my gut navigate, my tendons and muscles, and the intuitive part of me that, while I'm moving in responsive computer systems, asks the important questions: why is this compelling? what does this interaction reveal? why is the audience reacting this way? These questions sustain the momentum from rehearsal to performance, from performance to devising the next piece. The improvisation process at the basis of creating live performance in responsive computer systems is animated by ongoing questions concerning technology; hence, it makes sense to turn to Heidegger's influential lecture from 1955 called "The Question Concerning Technology" for an evaluation both of the practice of creating digital performance work and of the relevance of Heidegger's *techne* to contemporary attitudes toward technology.

73

Thought is a practice, movement is a practice, writing is a practice, making art is a practice. In addressing the question of *techne*, and considering the tricky question of the relationship between *techne* and technology, it is easy first to bump into the perceived duality between *techne* and *episteme*. "What is *techne*?" we ask. "The opposite of *episteme*," we are offered, unhelpfully. Or we are told that it is related to craft. Uneasy with dualities in general, I am concerned in particular that the duality between practice (*techne*) and thought (*episteme*) is just another version of the duality between body and mind, and, indeed, that it fosters the pernicious splice between craft and art that pervades attitudes toward media and creative work with digital technologies. But Heidegger does

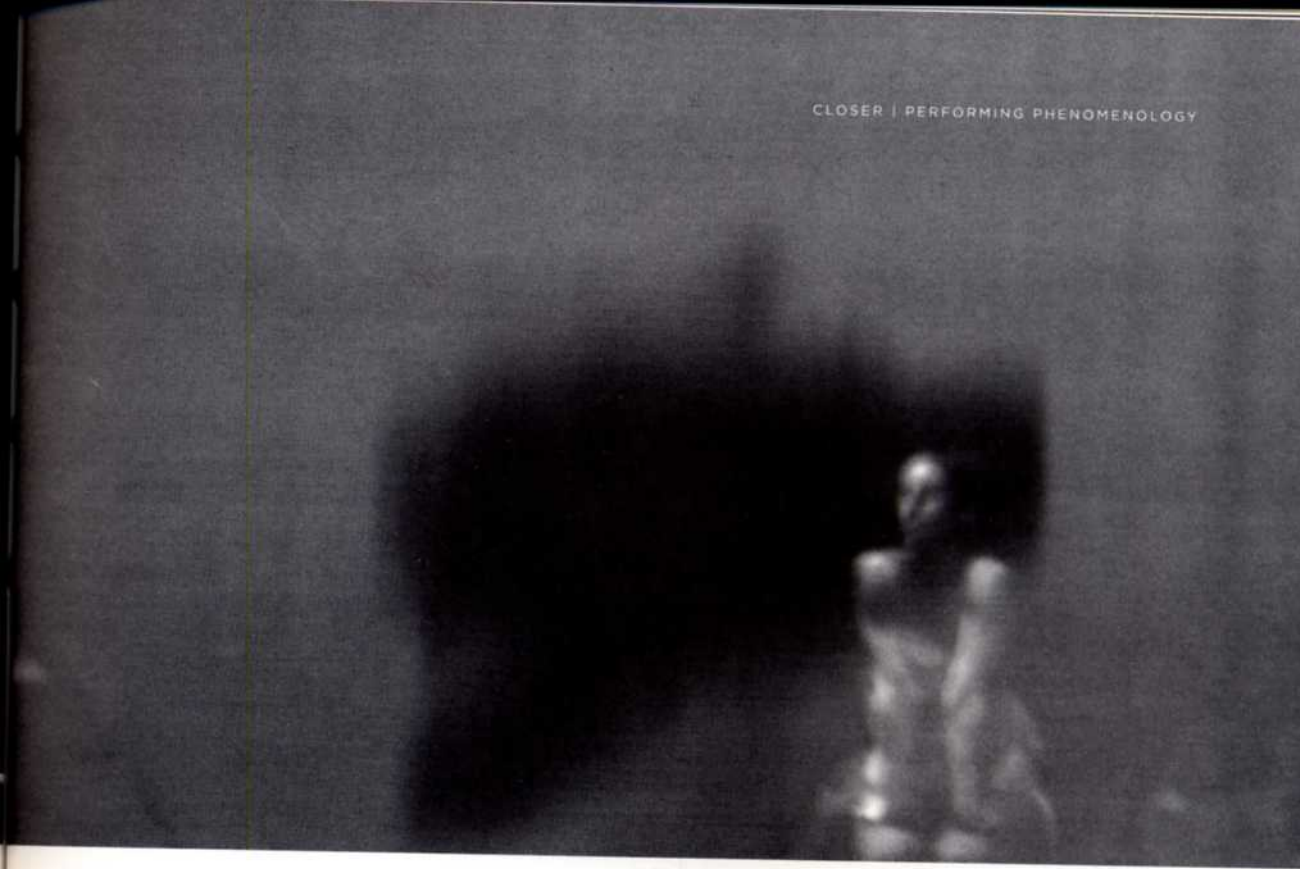




74 not, in fact, suggest a simple opposition between *techne* and *episteme*. Both are, he writes, forms of knowing: "Techne is the name not only for the activities and skills of the craftsman, but also for the arts of the mind and fine arts. *Techne* belongs to bringing-forth, to *poiesis*; it is something *poi-etic*... From earliest times until Plato the word *techne* is linked with the word *episteme*. Both words are names for knowing in the widest sense" (1977, 13).

Fundamentally, *techne* is about revealing what was concealed, rather than manufacturing or simple instrumentality: *techne* is a bringing-forth, and technology is a mode of this revealing. In other words, *techne* is the broad human activity of bringing things into being, while technologies are a modality, or specific set of practices, within this wider domain. It is important to create a distinction between *techne* and technology, because although they are proximate, they do not refer to exactly the same thing. At the risk of being overly reductive, one is a subset of the other. Heidegger explains that technology is neither merely instrumental (a means to an end) nor merely anthropological (a human activity). It is a mode of revealing, through a procedure called *enframing*. This is where technology is close to *techne*, which refers to that which is not yet before us, or as Heidegger says, "that which can go one way or another." So as I write these words and decide what I will and will not consider, I am engaging in an act of *techne*—just as I am when I confront the void with every new performance piece and see what movement comes out of the process.

FIG. 12 above, *immanence*, 2005



75

Building on the position of *techne* and *episteme* as knowledge rather than as the basis for a duality between doing and thinking, I emphasize that deeper levels of bodily knowledge and the physical arts have a place in *techne*. And if the suggestion that technologies are not instrumental but are a mode of revealing that is taken to heart, then it is not out of the question for technologies to reveal aspects of embodiment. This goes beyond the arguments that we are subject to technologies of the body (Mauss 1992; Foucault 1995, 2003), techniques of perception (Crary 2003), or technologies of gender (De Lauretis 1987; Balsamo 1996), all valuable contributions to embodiment, culture, and power. Under the rubric of *techne* I refer to the layers of physical, conceptual, and social knowledge that are revealed through digital/physical interfaces; these layers were concealed, but through the practices of reflection and movement they come to take their place in wider circles of language and collective practice. Etymologically, the two possible classical Greek roots for Heidegger's derivation of the word *techne* are both relevant to this interpretation of *techne*: *tek*, to bear or beget, evokes the strong sense of bringing forth, but also adds an implicit sense of the womb, women's bodies, and the physical act of birthing; the second possible root, *teks*, relates to fabrication or weaving (Lovitt and Lovitt 1995, 687). Weaving, a favorite metaphor for cyberfeminists (Plant 1997), is relevant both for overcoming an implicit divide between the soft crafts of knitting, weaving, and sewing and the hard domains of software and mechanical engineering, and for defusing an implicit gender divide according to which girls and women are seen to avoid, or simply be "bad at," technological endeavors. This book enacts an entwined dynamic of *questioning concerning*

FIG. 13 above, *Immanence*, 2005

*technology and questioning concerning embodiment*, obtaining both a clearer sense of *techne* and of the wider implications of performance processes, or simply *technique*.

The key performance practice behind the design and presentation of so many performance and technology projects is improvisation. I locate improvisation squarely within *techne*. Following Heidegger, I suggest that improvisation, like technology, is a mode of revealing within *techne*: "It is technology that makes the demand on us to think in another way what is usually understood by 'essence.' But in what way?" (1977, 30).

76 Thinking essence in another way refers to reexamining how things are, in the light of how they unfold. Essence for Heidegger does not refer to a generic type, but the ways in which something "essences" or "endures." It is a changing active designation, and as such is akin to phenomenological knowledge. He uses a set of verbs to convey the essence of things: how things "hold sway, administer themselves, develop and decay" (ibid.). It is impossible to emphasize enough the importance of the verb in Heidegger's thought, the importance of the dynamic, shifting ever-changing quality of what makes us who we are, and this is where I see *techne* opening up space for *technique*.<sup>21</sup> Fundamental to verbs is a sense of temporality, and a concerted attempt to let something new emerge requires questioning standard registers of temporality, or rhythm. Improvisation can be used to address questions of rhythm by breaking the flow and pacing of daily existence, by creating a slow deliberate space, or a disrupted space, or a quick and rapidly changing space. Improvisatory techniques are techniques of revealing and can be illustrated further through the example of dwelling or being at home, other Heideggerian turns of phrase. Improvisation is one of an array of techniques from theater, music, and dance that overlap with techniques for attention and focus.

What *techne* and *episteme* mean, Heidegger writes, is "to be entirely at home in something, to understand and be expert in it. Such knowing provides an opening up. As an opening up it is a revealing" (ibid., 13). Performers will be able to identify a certain level of familiarity with a technique, a set of movement patterns, or an instrument gained over time and through practice. It takes repetition to really know a sensation, emotion, a pattern of movement through space, or a series of movements within one's own body. This sense of "being at home" is achieved through spending protracted periods of time in a particular physical state, or, I have come to realize, within a particular computer-mediated responsive system. Paradoxically, it is familiarity, or being at home, that provides scope for the unexpected. The idiosyncrasies of one's body and the unexpected qualities



to emerge from sustained improvisation are matched by the idiosyncrasies of every responsive computer system, for which the process of calibration is as open to ghosts in the machine as is a human's mood and physical state subject to swings and flux. A deep physical understanding of how a system is likely to respond arrives through "dwelling" within the system, in the sense of being "absorbed" in it (Heidegger 1962, 80). When this familiarity is combined with the ability to react and respond to unexpected changes in sense data, fundamental to improvisation, then movement vocabularies arise from *within* the experience rather than being grafted on from the outside. In terms strangely resonant with improvisation, Heideggerian "dwelling" has been characterized as what we do as mortals, demonstrating a commitment to the inherent precariousness of existence; it is about being ever-open and present, existing in any given moment (Lovitt and Lovitt 1995, 189-190). Contrary to what it may seem, the richness of most well-designed responsive computer systems increases in proportion to the time spent within them. The opening or revealing of the depths of potential physical/technological engagement arrives after much time inhabiting a context, as is true with dwelling in the dance studio, on the yoga mat, in meditation, or at rehearsals.

77

Heidegger concludes that one turns to art to better understand technology, "because the essence of technology is nothing technological" and art is at once akin to technology and fundamentally different from it (1977, 35). Like the instant when the painter's "vision becomes gesture," when the painter "sees in painting," we perceive through our technologies, we create through them, and they are entwined with our bodies. More than prosthetics, they become part of our ontological fabric; as such technologies and bodies are part of the connective tissue, or flesh, that makes up us, the world, objects, animals, and thought. It is this flesh that contains historicity and futurity. "A feeling of profound discordance, a feeling of mutation within the relations of man and Being" can be produced, according to Merleau-Ponty, by our exposure to painting. *To painting*. Contemporary cultural critics argue that a similar mutation occurs with our exposure to technologies, from robotics to telecommunications to genetic engineering (Postman 1993; Virilio 1999; Baudrillard 2000; Dreyfus 2001). Understanding technology as *techne* functioning through technique strips it of a priori utopianism or dystopianism; like vision, technology can "reassume its fundamental power of showing forth more than itself" (Merleau-Ponty 1964a, 178-179).

SATURATED BY THE  
VIRTUAL

78 The last section of this topographical triad at the end of this long chapter addresses the virtual. Keeping with the goal for these final three sections, of sketching a terrain of relevant concepts while indicating the particular orientation taken by this book, ideas surrounding the virtual will be stirred up and a few will be collected and carried forward.<sup>22</sup> The use of the word saturation in conjunction with the virtual works on many levels: it is an evocative sensory term that draws the body into the experience of virtuality. Saturation makes us think of a liquid that permeates our pores, seeps into our skin; it transforms the properties of materials and can't help but transform the affective state of a person. Being saturated by anything (rain, polemics, visual data) can be pleasurable, or it can be deeply annoying. It is a sister term to immersion, also an aquatic metaphor: effective immersion involves saturation. Continuing the short passage at the beginning of this section, Grosz indicates that the virtual is currently contained "behind the glassy smoothness of the computer screen," as if this is a safer place for it. Her argument works to loosen the containment of the virtual and to release it into the domain of the potential: the new, the unthought, the unrealized. Inhabiting the virtual as a space of potential is relevant to the discussion in the following four chapters. This ontological (or as Brian Massumi would say, *ontogenetic*) characterization is predicated on two more basic assertions: that the virtual is not opposed to the real and that it is a materiality rather than an immateriality; and leads to a third assertion: that the virtual is a social designation with ethical implications.<sup>23</sup>

The real is saturated with the spaces of projection, possibility, and the new that we now designate as virtual.

—ELIZABETH GROSZ, *Architecture from the Outside: Essays on Virtual and Real Space*

The terms *virtual* and *virtuality* are defined, redefined, and disputed as artists and designers, software and hardware creators, critics and entrepreneurs wrestle with the definitions best suited to their efforts and aspirations. The virtual has extratemporal and extrasensory dimensions at the same time that it is embedded in actual experience: extratemporal in that its designation is partially utopian or fantastical, not yet fully created but already well entrenched in the cultural and personal imaginary; extrasensory in that there is an exaggerated sensory quality to virtuality, or a remapping and extrapolation of existing senses. It is no accident that virtual environments are discussed and evaluated in terms of their quality of immersion, and that immersion, despite the acknowledgment that books and daydreams are immersive, is generally viewed as facilitated by virtual technologies (usually understood to be digital audiovisual technologies). The construction of the virtual at play in this book is too broad for many artists and scientists working in animation, graphics, and information visualization, but it is not as broad as Margaret Morse's suggestion (1998) that virtualities are forms of aesthetic expression supported by television, video, and computer. What I call virtual does not exclusively occur in so-called cyberspace or virtual reality, but it does not extend as far as television and video art, unless these are situated as an augmentation of two-dimensional and three-dimensional images with physical space and bodies.<sup>24</sup> The operational definition of the virtual in this book is more of an augmented reality than an entirely digital alternate reality. It is based on a reconfiguration of physical dimensionality and an experience of sensory saturation occurring through an engagement between people and computer technologies. Implicit is an inability to tell

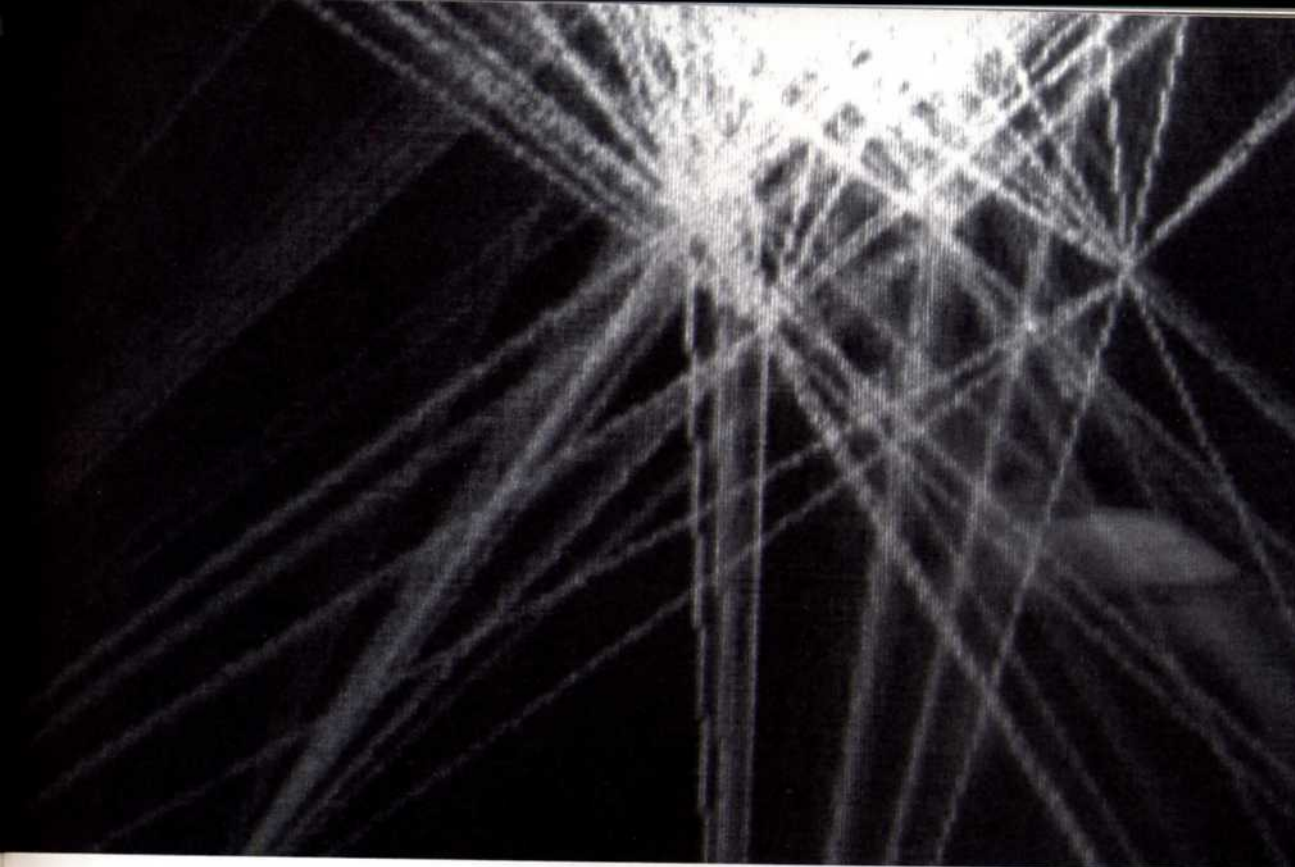




80 where the digital body ends and the physical body begins, and, most important, the conviction that distinguishing the two no longer matters.

It is a challenge to dislodge the virtual from the fundamental Cartesian stance behind so many formulations that contrast it with the real. While I resonate with the passion behind Keith Ansell Pearson's assertion (2002) that the "virtual is not almost real but wholly real and the real is, in fact, unencounterable and unthinkable without it," in my experience it is the body that suffers dissolution or dismissal so long as any vestiges of dualism between virtual and real survive. Once the virtual is seen to be half of the virtual-real duality rather than a multifaceted designation in itself, the discussion becomes metaphysically skewed and a flotilla of other dualities crowd the space, including, most perniciously, the mind and the body, but with equal tenacity the illusory and the real, culture and nature, and male and female. My earliest philosophical tussles with the notion of the virtual demonstrate this clearly. Preceding my encounter with technologies of any form other than the word processor, I was concerned with discovering a philosophical approach to dance that was centered on the lived experience of the dancing body, rather than on the formal constructions of choreography or aesthetics. Susanne Langer (1942, 1953) used the virtual as a way of understanding symbolism in art and dance, and Maxine Sheets-Johnstone, following Langer, used the virtual in her *Phenomenology of Dance* (first published in 1966) as a way of understanding the dynamics and physics of the dancer in motion. With no foreshadowing of head-mounted displays and navigation

FIG. 14 above, *immanence*, 2005



within 3-D graphic environments, Langer located virtual spontaneous movement and virtual gesture within dance: "The dancer's actual gestures are used to create a semblance of self-expression, and are thereby transformed into virtual spontaneous movement, or virtual gesture. The emotion in which such gesture begins is virtual, a dance element, that turns the whole movement into dance-gesture" (1953, 180).

This is a good example of distortions enacted upon the term *virtual* when it is embedded within the virtual-real duality and used to qualify an action, object, space, or emotion that is distinguished from the real. In this case, Langer wants to distinguish real emotive movement from the movement that is reproduced by a dancer to convey the emotions. Actual gestures disappear and are replaced by something very like an avatar: "a created personality, a dance element . . . a psychical, human or superhuman Being" (ibid., 181). Sheets-Johnstone takes the argument further by suggesting that dance is virtual force and the dancer creates virtual force with her body, and therefore what is at stake is an illusion of force, "a sheer appearance of force" (1979a, 41). The sweating, breathing corporeality of dancing bodies, with their tendency to injury but capacity for exhilaration, struggles beneath the weight of a near Platonic duality between illusion and reality that lends priority to the appearance.

Virtuality in its most compelling incarnation can be seen as an underinscribed space of potential rather than a brittle simulacrum of the real or an immaterial world; this locates us in a zone of



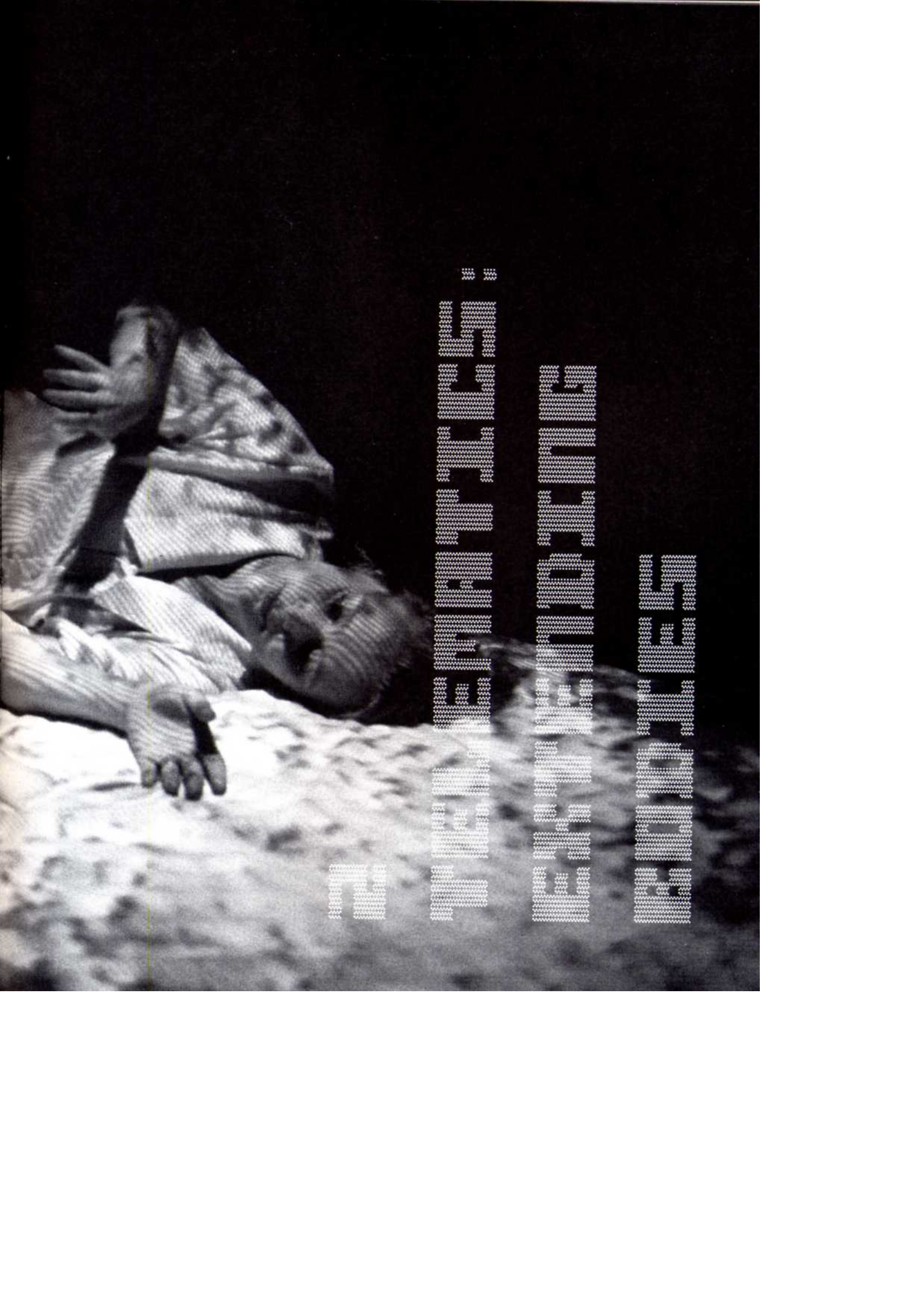
unforeseen creativity out of which an ethical encounter with the world and the people in it can be constructed. Interpreting Deleuze, Grosz considers the transition from the possible to the real to be "predictable," like the possibility of showers tomorrow turning into the reality of my needing an umbrella to keep dry when I leave the house in the morning. Contrasting with that apparently smooth transition, "the relationship between the virtual and the actual is one of surprise, for the virtual promises something different to the actual than it produces, and always contains in it the potential for something other than the actual" (Grosz 2001, 12). Virtuality becomes the space of radical potential, with scope for existential, artistic, and political transformation. It is Deleuze who really captures the potential quality of the virtual indicating that its actualization "always takes place by difference, divergence or differentiation" and it is in this sense that it is "genuine creation" (Deleuze 1994, 212). Most artists are compelled by the suggestion of extraordinary creative potential within radical notions of virtuality, but with them there is also the risk of a disturbing decontextualization or severance from history, society, and culture. A different sort of utopianism can be associated with some interpretations of the virtual. Instead of the kind that sees a utopia of a mind freed from the constraints of the flesh of the body, this version holds onto the virtual as a field of potential where what can emerge is not preformed or predetermined. It feels like the fervent and almost naive desire of the inventor or artist who does not want to be confined to a future that is destined to repeat the errors of the past, or to an artistic practice that is endless quotation or reproduction of what came before. Merleau-Ponty, never considered a philosopher of the virtual, lets the virtual and what it represents reside (as much as it can in his thought) within flesh as latency or the invisible. What this lacks in radical differentiation, it gains in materiality by embedding the scope for change within the tissue of bodies, history, and the world. With painting, once again, as his artistic reference for human perception, he writes: "Between the alleged colors and visibles, we would find anew the tissue that lines them, sustains them, nourishes them, and which for its part is not a thing, but a possibility, a latency, and a *flesh* of things" (Merleau-Ponty 1968, 133).

Consistent with the flow of this book toward an articulation of a corporeal ethics, Francisco Varela's approach to the virtual has a place, calling attention to the virtual as more than simply an individual's sensory experience. Influenced by Eastern philosophical traditions and biological research into the "constant arising and subsiding of neuronal ensembles underlying behaviour" (Varela 1999, 52), he suggests that the nonsubstantial self acts as a "virtual interface" and that ethical know-how is the "progressive, firsthand acquaintance with the virtuality of self" (ibid., 61-63). Spontaneous compassion is not derived from axioms or rules; it arises from the demands of responsivity to the



particularity and immediacy of lived situations. The virtual self, as decentered and spontaneous, performs and improvises within an underdetermined space. This sense of groundlessness wherein responsivity to the elements of a new system escapes habit and fosters new movement and ideas is what, in a small way, animates the following chapters.





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GETTING  
TOGETHER  
TOGETHER  
TOGETHER



Painting awakens and carries to its highest pitch a delirium which is vision itself, for to see is to have at a distance.

—MAURICE MERLEAU-PONTY, "Eye and Mind"

86 Variations on the theme of videoconferencing, audio and visual connections between remote sites, are often referred to as telepresence in an art context. Related terms compete for bandwidth. Communicating a poetic sense of what is concealed has been referred to as teleabsence (Lozano-Hemmer 1997), and other projects are more appropriately designated as telerobotics, indicating action at a distance, and telepistemology, referring to knowledge at a distance (Goldberg 2001). The term *telematics* (introduced to me by Paul Sermon and used by Roy Ascott [2005] and others) broadens the scope because it is not pinned to presence or to the visual. Telematics permits for a play across absence and presence, as well as a range of dynamic impulses, both human and nonhuman. The suffix "matics" is quaintly mid-twentieth-century (evoking "modern" kitchen appliances like "blend-o-matic") and is infused with enough ambiguity for it to be open to diverse underspecified interactions. The performances and installations considered in this chapter provide a range of phenomenological interpretations of telematics by revealing how the human senses of intimacy and physical connection are dependent on playing across what is revealed and what is concealed, rather than simply on what is visually displayed. The underspecification of telematics allows for each project to fill in the blank with its own discoveries rather than implicitly prefiguring them as falling in one domain or another: not just presence, not just absence, not just action, not just knowledge—all of these and more.

Look around you now. Are the images of what you see inside your brain? Or are they outside you—just where they seem to be?

—RUPERT SHELDRAKE, *The Sense of Being Stared At: And Other Unexplained Powers of the Human Mind*

Why did telematics cause such a stir at the end of the twentieth century? As a platform for performative telecommunication, it was accessible, achieved with limited financial resources and operated by people with limited computer skills—it was not necessary to have a degree in computer science or a history of geekery to be able to get the links up and running. It was highly poetic and kinaesthetic, offering a directly intuitive engagement between bodies across distance. It put into play concepts of time and space. All this aside, with hindsight, the appeal of telematic artwork was influenced tremendously by the widespread embracing of Internet communications, as people opened their homes, not only their workplaces, to email and Internet. This meant that many people had their own personal take on the performativity offered by telematic systems, and artists were doing something that they themselves had tried or had some opinion about: this was art converging directly with life and evoking questions from the banal to the highly theoretical.

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This chapter is comprised of phenomenologies based on five distinct projects. The projects and the writing occurred across an eight-year timespan and reflect a particular slice of cultural and technological history, but the observations to emerge have resonance beyond the seeming obsolescence of the operating systems or software. While no one now uses CU-SeeMe ("See-You-See-Me") for low-bandwidth Internet videoconferencing, realizations about materiality, touch, and distance to emerge from these experiences continue to have resonance. In addition to the performative content, what becomes evident in this chapter is the scope for phenomenology.



the camera, for I knew when I was being seen simply by where I was positioned. I could shift myself physically to one side so that I was partially in and partially out of the camera in order to document my own experiences unseen while still having part of my body on view. The peculiar configuration of this piece provided the opportunity for me to enact the tightest performative-reflective loops: I could at times be performing in a limited way almost at the same time as I was documenting my own experiences. I think this partially accounts for the vivid quality of the description of the experiences. This piece simultaneously enacts and challenges a controversial component of Don Ihde's structure of phenomenological process found in his book *Bodies in Technology* (2002). Ihde structures a conceptual and perceptual distinction between two bodies: *body one* and *body two*. He describes *body one* as "the motile, perceptual, and emotive being-in-the-world" (ibid., xi). This is the fundamentally phenomenological body that sees from the first-person perspective and can also be called the "here body." *Body two* is the socially and culturally constructed body, associated with the third-person gaze and considered the "disembodied over-there body" (ibid., 6). This distinction between the biological and cultural is artificial, Ihde acknowledges, and once its purpose of clarifying one's thoughts is fulfilled it necessarily collapses. My telematic experience of violence dramatically exhibits a momentary shift out of my dominant experience of inhabiting my body (*body one*) to viewing my body as a disembodied over there body (*body two*): "A split-second after they began to hit me I found myself watching my image in the video monitor, paralyzed with horror at what they were doing to the woman's body—no longer *my* body" (see page 98). This may be attributed to a



90 common out-of-body experience of the sort that are well documented as occurring during moments of violence or pain, or it may be an example of Ihde's assertion that "traversing both body one and body two is a third dimension, the dimension of the technological" (Ihde 2002, xi).

Detailed introductions to the other phenomenologies in this chapter are not necessary, but it is useful to provide a topography of intellectual and social context navigated. Section 2.2 is perhaps the most philosophical section; it sets up a dialogic structure with two outside sources acting in counterpoint to the phenomenological perspective of creating and performing in a telematic performance called *Ghosts and Astronauts* (1997). The distinct exchanges are with urbanist Paul Virilio and choreographer Kitsou Dubois. Virilio's concerns regarding the loss of the body in telepresence are addressed, while Dubois's choreographic experiments and her own evocative phenomenological descriptions of moving in zero-gravity are expanded.

Section 2.3, *Architectures of the Real*, offers one of the few phenomenologies in which I address space and psychoanalysis. The original format of this piece is worth mentioning because it was a hyperreflective experiment in itself. Given as a keynote to a conference on electronic art called *Body Electric* in Vancouver in 1997, it was part performance and part philosophical paper. As a modality I don't think it was very successful—others have worked this format far more successfully than I have—but it did bring up questions on space and architecture that I picked up once more in



later phenomenologies when time rather than space was addressed (see consideration of *Room with a View* in chapter 3).

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Section 2.4, *Liftlink: On Voice and Ideology*, considers voice and questions of ideology concerning the production, reception, and dissemination of ideas around experimental performance. It is perhaps the most journalistic contribution to the book and is directed the most overtly at a dance audience. It has never been published, having been editorially censored at the time in 1998: a circumstance that has been integrated into the discussion. The final phenomenological analysis of this chapter, in section 2.5, belongs here because of the technological platform used (low-bandwidth videoconferencing) but differs from the rest of this book because it is not based on a professional performance or art installation. It is based on an experiment in higher education. So many artists are educators. Our tools, skills, and ways of looking at the world, bodies, and technologies are mapped into education. Our voices are relevant in these areas too, but we do not often articulate ourselves through this world. Insight from Jónathan Crary and Hubert Dreyfus is integrated into an extended discussion, in counterpoint with valuable contributions from students. We attempt to turn telepresence communication on its head. Instead of comparing it to so-called "normal" presence situations, we ask whether the process of physically connecting with each other through cameras, software, and the Internet can reveal the many layers and textures of our communication and lead us to the realization that it is all mediated.

## SPIRITUALITY: VIRTUALITY AND MATERIALITY

Virtual reality is a new materiality. For four weeks I performed in Paul Sermon's *Telematic Dreaming*. The installation was part of a large exhibition of contemporary art in central Amsterdam called *I + the Other: dignity for all, reflections on humanity*.<sup>2</sup> Spending several hours a day over a period of weeks in virtual space allowed me to explore in greater depth the relation between my "cyber-body" and my fleshly body, and gave me greater insight into some of the sexual and political implications of the technology.

With *Telematic Dreaming* Sermon created a space for interaction between a performer and members of the public using a technology called telepresence. Using video projectors and monitors Sermon drew together people in two separate rooms. There was a bed in each room. I was alone on a bed in a room well removed from the public visiting the exhibition. My image was projected onto the bed in the room that was open to visitors, where they had the option to join me. Then video cameras in the public room transmitted the actions of the person on the bed with my image back to me in my room upstairs. I was able to interact with the person on the bed downstairs by watching both of our images on the monitors placed around my bed. The bed became my performance space. Our movement occurred in real time, but in a space that was entirely created by technology. I was alone on my bed, moving my arms and legs in physical space as if in some sort of hypnotic ritual dance, yet in virtual space I carried on intense physical improvisation with other unknown bodies.



Whereas the playwright and the filmmaker both try to communicate the idea of an experience, the spacemaker tries to communicate the experience itself. A spacemaker sets up a world for an audience to act directly within....

—RANDALL WALSER, "Elements of a Cyberspace Playhouse"

Virtual reality (VR) is the name for the computer technologies that create the illusion of being immersed in an artificial world, or of being present in a remote location in the physical world. In many VR applications, such as architectural design, medical imaging, and flight simulation, the virtual space is reached by placing a head-mounted display (HMD) on your head and donning a dataglove. The HMD can resemble a large scuba mask or lighter-weight sunglasses. It replaces your view of the world with a three-dimensional computer-graphic depiction of a world provided by a computer, while the glove contains the digital controls that allow you to navigate in the computer-generated space. This was not the space of *Telematic Dreaming*: my body was not abandoned while my consciousness traveled in an all-encompassing three-dimensional space. Yet my body did take on an electric state, for the only way I could move was by relying on the video images of both myself and the others.

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## TRUST

In *Telematic Dreaming* human interaction was reduced to its simplest states: touch, trust, vulnerability. Movement usually began in a hesitant way with hand contact taking on excessive importance. The impact of slow and small movement became enormous. Great care and concentration was required to make intricate web patterns with the fingers of a stranger, or to cause one fleshly



finger to meet up with one video finger. When the movement progressed from these early stages to a sort of full-body choreography, the piece became an emotional investment that shocked and sometimes disturbed people. Some people simply froze, and fled the installation once they realized what was happening. When politicians or members of the Dutch royal family visited, they did not even venture onto the bed for fear of being recorded in a compromising position.

The occasions when the movement worked well felt very much like good contact improvisation: a hypnotic feeling of not knowing what is coming next but letting the strong flow of movement carry you onward. When the movement moved through us in this way, based on openness and trust, the distinction between which bodies were real and which were virtual became irrelevant.

Performing the piece was emotionally taxing as well as enriching. For a time I worried that by being drawn into tender and intimate interchanges with dozens of strangers who got on the bed, I would be desensitizing myself to the detriment of relations with my real lovers, exhausting myself, rendering myself mechanical or cynical. This concern in itself is an indication of the strong physicality of the piece, of the powerful link between the body on the screen and the bundle of emotions, thoughts, and movement that make up my material body. The mechanization or computerization of human experience is generally thought to diminish the physical and emotional sides of life, yet in the virtual world of *Telematic Dreaming* questions of privacy, intimacy, and identity were central.



This was not just my experience as a performer; many members of the public were overwhelmed by their experiences on the other bed. Some felt protective toward me, or stayed on the bed because they didn't want me to be alone in my virtual world. Others claimed to have been "changed" by the experience. The installation was paradoxical not only for using technology to provide a forum for experiencing the basics of human intimacy, but also for situating this private interaction within a public domain.

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## PAIN

My back and neck rebelled after two days of performance, forcing me to evaluate the relation between my physical self and my virtual body through that ultimately corporeal experience: *pain*. I couldn't turn my head to the right and the mobility in my right arm was reduced by more than half. My feet, knees, hips, and spine cracked at the slightest turn. I felt as if I were disintegrating. Through pain I was able to see a link between the seemingly abstract image of myself and my flesh. My pain was discernible in my image, giving my movement a peculiar stiffness.

At the same time I became obsessed with the invisible side of my body: digestion, intestines, breathing. Also when to eat, what to eat, how it affected my moods, and the way my body felt.

FIG. 18 above, *Telematic Dreaming*, 1994



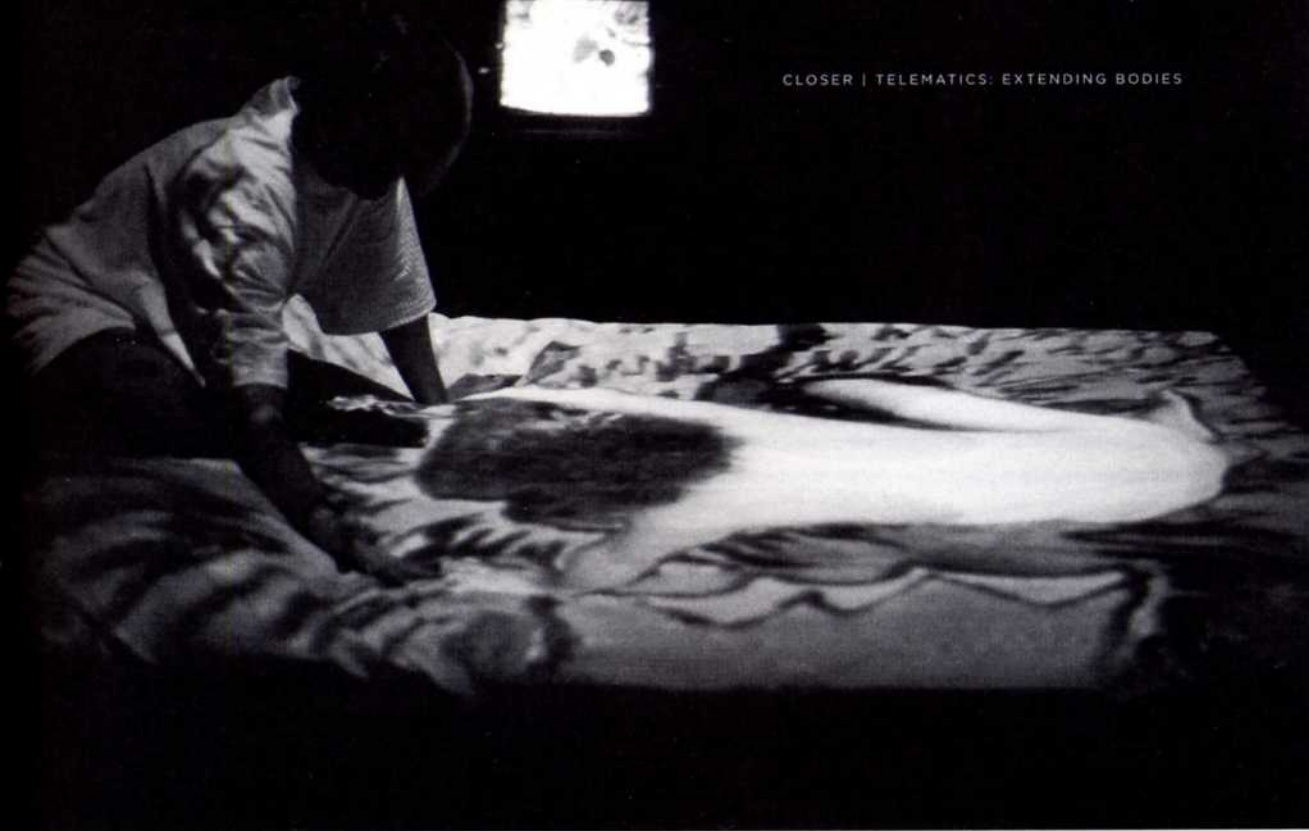


It was as if my involuntary organs could not be counted upon to perform their usual roles unassisted by my conscious self. They called attention to themselves through pain and cramps. My real body asserted its presence as a response to the virtual image that had come to dominate my movement while performing. The invisible elements of my body began to take on a new, demanding significance, as if needing to assert themselves to balance the scale. Digestion does not appear on the screen. Admittedly it does not appear through flesh, but it is even less present in a context where the body has lost its three-dimensionality. The more I ventured into the visual, virtual world, the more my visceral body called attention to itself like an anchor, like ballast. I seemed to be pulled between the two extremes of an imaginary spectrum: the abjection of flesh and the sanitization of technology.

#### SEX AND VIOLENCE

Someone took out a knife. Not in a threatening way, yet I felt the predictable shiver and it set off alarm bells in my mind. The most he could do was slash the duvet, but I still felt uncomfortable. The knife is a loaded item; it entered the virtual space of *Telematic Dreaming* as a heavily inscribed object, meaning that it could not be separated from a code of behaviors and a set of emotional and physical responses, particularly since the knife wielder was a man and I was a woman on a bed.

FIG. 19 above, *Telematic Dreaming*, 1994



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Someone elbowed me hard in the stomach and I doubled over, wondering why since I didn't actually feel it. But I felt something. I was shaken for a while; it was a betrayal of trust. The famous claim associated with virtual technology is that the body is obsolete, replaced by an infinitely enhanced electronic construct. If this is so, then why did nastiness or violence enacted upon my image hurt? How could the body be irrelevant yet still exert a basic visceral control over my movement?

The potential for violent as well as highly pleasurable interchanges was inherent in *Telematic Dreaming*. Frequently I allowed myself to play, and at times I luxuriated in the physical intimacy and sheer decadence of it all. After a tender and intimate quarter of an hour of improvised movement, a man returned with a rose. He presented it to me in virtual space so there was no way I could take hold of it, beyond tracing its outline or passing my hand through it. It became a metaphor, and fundamentally immaterial. It occurred to me that what preserves the distinction between materiality and immateriality in the technology is movement: as moving beings people take on an alternative materiality, while objects become immaterial in their inertia. Virtuality is a verb-space, dynamic, shifting.

An unlikely character dressed in blue and green, wearing philosopher's glasses, calmly stroked my thigh, brushed delicately over my hips and up my torso. He remained partly detached, or at least quizzical, and his movements were languid but not overtly sexual. I felt little electric shocks pass

FIG. 20 above, *Telematic Dreaming*, 1994

through my body as I accepted the caresses. Not five minutes after this, I experienced the worst cybersexual violence of the entire time. Two men in leather jackets jumped my image on the bed. One attacked my head and the other my pelvic area. After three or four body-twisting blows, they fled. It was a back-alley scenario. What did I feel? Very little. This amazed me, after my body had felt so much in the subtly erotic context and through earlier acts of aggression. I believe that the extreme violence of the attack caused me to separate my physical self from my virtual self. A split-second after they began to hit me I found myself watching my image in the video monitor, paralyzed with horror at what they were doing to the woman's body—no longer *my* body. This was the only moment in the entire four weeks when I divorced my two selves, and it was the result of an involuntary act of self-preservation—a primordial reaction in a sophisticated technological context.

Virtual sex has been dubbed *teledildonics* in the pornography and VR circles, where it refers to machines that stimulate parts of your body in convincing sexual ways. The teledildonic approach to virtual sex leaves out the element of mimesis, which involves vicarious participation and the suspension of disbelief—the basic ingredients of theater. When these are overlooked virtual sex tries to be a direct substitute. This leer-and-a-wink approach to virtual sex foresees the development of computers that replace physical stimulation. The complexity of technology required for this is described by Howard Rheingold in his book *Virtual Reality*: "Every nook and protuberance, every plane and valley and knob of your body's surface, will require its own processor . . . It will take decades to develop the mesh of tiny, high speed, safe but powerful tactile effectors [vibrators]" (1991, 347). He asks whether focusing on the narrow functions of "interactive tactile telepresence" is the ultimate sexual revolution or the first step toward abandoning our bodies.

The virtual sex I experienced was based on the energy, intimacy, and rhythm of lovemaking: a tender beginning, playfully building up, making shapes with our bodies, improvised rolling through one another—a different sort of interiority at play—followed by a slow and intimate denouement. I was so involved in the flow of improvised movement that it was only once the cycle drew to a close that I recognized it. It was not a substitute for sex, it was a mimetic version with strong physical and emotional qualities. It was a variation or extension rather than a technological replica. Moreover, it was undeniably real, not a compromise. As with the question concerning the reality of theater, that of the reality of virtual experience becomes spurious, with no adequate grounds upon which to test it. In some respects, the advancement of virtual technology will help render the claim that theater is an artificial reproduction of reality even more nonsensical. The designations between the virtual



and the real in our media-soaked world become blurred. It becomes more and more difficult to sustain a clear distinction between truth and falsity when the phenomenology, or direct experience, of technology is taken into account; when, according to Marshall McLuhan, the contours of our own extended bodies are found in our technologies (1964, 6-7).

My virtual lover visited me several times. The times we met in person were wooden, stilted: our preferred mode of interaction was virtual intimacy, not chatting over a cup of coffee in a crowded gallery. Although both contexts were real, our virtual relationship seemed to be more meaningful. The difference between our ages and cultures lost significance, but *not* because our bodies were digitalized and abandoned. It was just the opposite. Our virtual rapport had a greater physicality and intimacy than our real engagement.

### THE BODY ELECTRIC

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As a dancer, hearing anyone claim that virtual technology demonstrates the futility of the body makes me want to dig my heels in, theoretically and practically. Yet this is a commonly held belief, based on the recognition that in much of the technology consciousness is drawn out of the body and into an electronic construct. Yet for me the experience was one of extending my body, not losing or substituting it. My intuitive conviction that the virtual body is entwined with the fleshly body was reinforced by my experiences of intimacy and violence in *Telematic Dreaming*. I discovered a theoretical basis for this intuition in the debate between intelligence amplification and artificial intelligence.

Frederick Brooks, one of the most prominent virtual reality researchers in America, makes this distinction, insisting that intelligence amplification (IA) is more interesting than artificial intelligence (AI). AI refers to a field of research that seeks to replace the human mind with machines. IA is different since it aims to build systems that amplify the human mind by providing it with computer-based auxiliaries to do the things that it has trouble doing (like enormous sums), thereby freeing it to scale new heights at more creative tasks (Rheingold 1991, 37). Translated into the debate concerning virtual technology and the body, an AI approach substitutes the body with a digitalized one, or sees it as a hindrance and tries to lose it entirely. IA, on the other hand, sees technology as an extension of the body's existing abilities, a building upon what exists, rather than a digital replacement.

In *Telematic Dreaming* my body was always the ultimate ground for the image, it was the final reference point and the source of meaning. Like the difference between three-dimensionality and four-dimensionality, the image provided my body with another dimension rather than rendering it obsolete. Initially I was disoriented in virtual space: left became right, up became down, and right left. Someone would touch one hand and I would move the other in response. My disorientation was a symptom of how moving was entirely mediated by my sense of sight. The way I overcame this was by drawing my attention back to the pattern of my body in physical space. Instead of moving my arm according to the logic of our images in the monitor, I would look at my body and move the hand on the side of the bent knee, or I would move my arm up toward my head. Once I directed myself according to my body pattern, I was able to overcome disorientation and avoid shattering an intense sequence of improvisation by moving the wrong limb. In this sense my electric body was an extension of my physical body—it could do things that the latter could not, such as map itself onto another or disappear, yet it could not exist independently.

100 Still, the virtual space of *Telematic Dreaming* was not an unqualified amplification of physical space, for in it movement was entirely mediated by sight. Under normal circumstances, dancing engages the senses in a nonhierarchical and kaleidoscopic way. Sight, hearing, and touch play obvious roles, and taste and smell, although less obviously defined, are still active participants in the whole experience. *Removing one of these senses does not bring the movement to a grinding halt.* However, if I lost sight of the monitors (as happened occasionally since there were only three, leaving one side of the bed blind), I lost myself as well as the other person: interaction became impossible. When interaction is dependent upon one sense, it becomes inherently fragile.

And the gaze is fragile, like crystalline channels between people conveying emotions or information. There were times when I would become only gaze and movement, making shapes with my body on the bed while taking no notice of anything except the figures in the monitors. Then, without warning, the flesh of my body would reassert its presence, recalling my focus from its temporary engagement four feet from my natural frontier within space. On one occasion, while thoroughly absorbed in interaction with another body, I passed my hand over someone's leg, he placed his hand on my leg, and when I followed his hand I touched my own leg—and was taken aback by its bulk. For an instant I didn't know what obstacle my hand had encountered after moving so freely in visual space. With vague feelings of guilt I realized that this foreign body was, in fact, my own. When I momentarily experienced my own body through my sense of touch, it did not coincide with my body according to

my sense of sight. The disorientation made me reassess what I took to be the frontier of my own body. Could it still be called a frontier if it was no longer fixed, but highly flexible and constantly changing?

The ability to disappear is central to the experience of the body electric. According to media philosophers Mark Taylor and Esa Saarinen, the "power of erasure" reaches near perfection with computers, and the way the presence of a person or a text can be transformed into seamless absence is fundamentally unsettling (1994, 11). I could disappear by wrapping myself in the chroma-key sheet that covered the bed or by sliding off the bed and out of the line of sight of the video camera. I could also make a part of my body disappear in order to leave another bit, like a foot, floating in digitalized space. This now-you-see-me-now-you-don't quality is central to the physicality of *Telematic Dreaming* since it implies a departure from and a return to the body as a whole. The unsettling quality is not merely, as Taylor suggests, the erasure of substance, but its reappearance. This approaches the traces of teleabsence within telepresence. Erasure is never complete; it becomes a space for the invisible or that which is latent to radiate forth.

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Telepresence has been called an out-of-body experience, yet what intrigues me is the return to the body that is implied by any voyage beyond it. Once plunged back into flesh, what has changed? Theorists and artists such as Randall Walser and Myron Krueger who claim that virtual technology changes what it means to be human, that it radically alters human perception, are not simply referring to the voyage out, but the inevitable return and the lasting effect that the outward motion leaves on the reunited body. It is here that the political dimension of VR resides.

## SEXUAL INSCRIPTION

There is much hype in intellectual circles over the cyberfeminist claim that virtual technology is ultimately liberating because in cyberspace you can leave your age, sex, and race behind and interact in a disembodied space, or in a space where you select another body as a persona. This was not my experience. There were times when I was dismayed by how strong cultural influences seemed to be, by how my actions as well as those of the people who moved with me were so shaped by codes of sexual and social interaction. I felt that this was the great limitation of the piece—the fact that it took place on a bed meant that much of the engagement was predefined. Yet I came to realize that this was also its great strength.



Banal sexual responses, such as grabbing and poking, were not open to a new vocabulary of movement since they fell into a sort of automatic code of behavior. And they were basically very boring. Sometimes I wanted to get rid of the bed, to see how the technology would work in a physical context that was not immediately recognizable so that a new social and movement vocabulary could be created. I had visions of a strange sculptural set in which bodies could be suspended, inverted, and layered. But I realize that in order to create a new space, and a new movement and cultural vocabulary, the old one needs to be fully identified and understood, not simply sidestepped. By confining the interaction to the bed, Paul Sermon challenged visitors (and myself) to identify their cultural formation and to overcome it.

Virtual space is not a blissfully undetermined area, an easy answer to sexual and racial inequality, an effortless digital utopia. By recognizing that gender roles can filter through to cyberspace, we are put on our guard against expecting any simplistic technological solutions to entrenched chauvinism. Yet it is undeniably an opening of potential: a space for us to recognize the tendency for our prejudices and conditioning to be carried forward, and to work at creating a new way to interrelate. In this sense *Telematic Dreaming* created a social and cultural space as well as a virtual one, and as we decided through our movement how to chart it, we became spacemakers.

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#### WHERE AESTHETICS AND POLITICS COINCIDE

Thus the spacemaker can never hope to communicate a particular reality, but only to set up opportunities for certain kinds of realities to emerge. The filmmaker says, "Look, I'll show you." The spacemaker says, "Here, I'll help you discover."

—RANDALL WALSER, "Elements of a Cyberspace Playhouse"

The aesthetic concern that animated my movement was the creation of shapes and affective connections across bodies, where the bodies had varying degrees of physicality depending on the perspective adopted. For the people in their room I was an image and they were flesh; the monitors that showed the action in both rooms transformed them into images and me into the image of a projection; from my perspective if I decided to ignore the monitors I was flesh and my dance partners simply did not exist. These varying physical states swirled and danced while we did the same. From a formal, choreographic perspective the piece was a delight, as unexpected shapes

made by our bodies appeared on the screen, challenging existing ideas of what it was possible for two bodies to do. We could pass through one another, I could be projected onto the other, or even disappear by placing my body within the frontier of another body. If the other wore dark clothing my pale, spectral image would be swallowed up until I let an arm or a sliver of my profile slide off their shape. It was easy to become a goddess of many arms, or to use the frame of the projection to act as a guillotine and slice away sections of our bodies. Standing on the bed brought us closer to the fixed overhead cameras, making our heads huge balloons above tiny feet. Our bodies seemed to be infinitely mutable, while they never ceased to be *our* bodies.

The amplification or distortion of physical experience is central to the politics as well as the aesthetics of virtual reality. Walser distills the political essence when he claims that "more than any mechanism yet invented, it will change what humans perceive themselves to be, at a very fundamental and personal level. . . . In important ways, cyberspace goes beyond all previous forms of expression" (cited in Rheingold 1991, 191). Perception (how we perceive ourselves in our environment) and expression (how we communicate with others) are basic ingredients of a political community. Once these are radically transformed by altering or distorting the substance and space of a body, the worlds of politics and science converge with that of art, for art is where the radically new is first transformed into experience.

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Walser asserts that knowledge of theater, sports, dance, and film will be as important as programming to the development of VR, since in these areas altered states of consciousness and physical experience combine to provide the grounds for a new way of life. Krueger also emphasizes that future VR systems will learn as much from the existing arts as from emerging art forms (cited in Rheingold 1991, 116). The collaboration between dance and VR technology is an emerging art form, or at least a hybrid made by uniting different ways of spacemaking. If dance is able to play a role in the future development of VR technology, we could end up with radical new directions for materiality within virtuality, as well as the basis for a poetics of virtuality that centers on the dancing body.

## EXILES, GHOSTS, AND ASTRONAUTS

- 104 *Ghosts and Astronauts* (1997) was a performance experiment occurring simultaneously between Riverside Studios and The Place Theatre in London. The videoconference link was made by Macintosh computers and basic Internet videoconferencing software (CU-SeeMe). Performers in each location were projected into the other for a physical exploration of intimacy, weightlessness, and altered materiality.<sup>3</sup>

When physical exploration is undertaken, through telepresence and other forms of digital intervention in performance, the physical and philosophical vocabularies that emerge are mutually shaped and critical of one another. This section charts a course through philosophical debate and performance practice. The different voices and perspectives to unfold here include a conceptual dialogue with Paul Virilio, the integration of Kitsou Dubois's writing into improvisation in rehearsal, and reflections upon the performance.

### DIALOGUE WITH PAUL VIRILIO

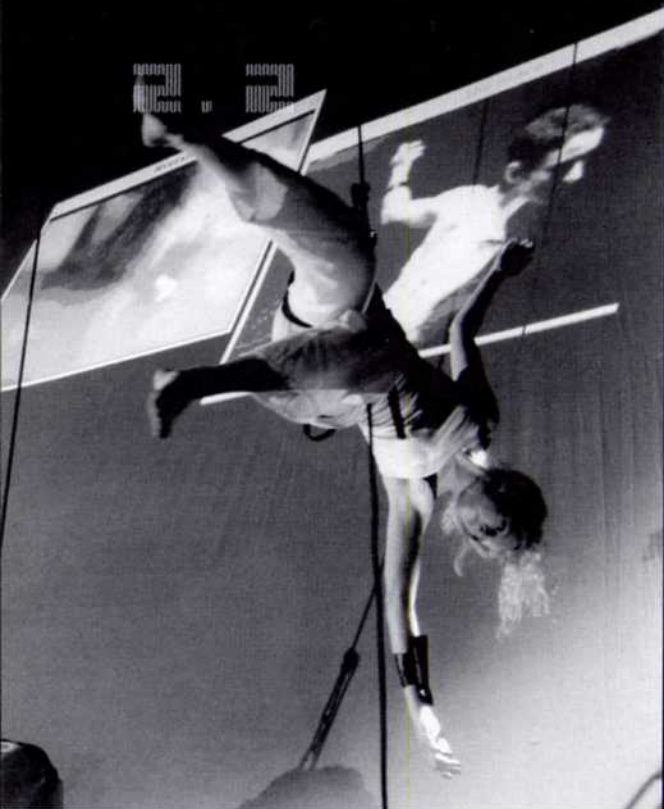
The question of telepresence delocalizes the position or orientation of the body. The whole problem of virtual reality is that it essentially denies the *hic et nunc*, it denies the "here" in favour of the "now."



I already said that "here" no longer exists, everything is "now"! Reappropriating the body is not merely a question of choreography, of which dance represents the maximal resistance, but also a question of sociography, or relating to others [*autrui*] and to the world. Otherwise it's madness, or the loss of both the world and the body. The technological time-gap producing telepresence is trying to make us permanently lose the body proper in favor of excessive love for the virtual body, for this specter that appears in the "strange window" and in the "space of virtual reality." The loss of the other, or the decline of physical presence in favor of an immaterial and ghostly presence, represents a considerable threat. (Virilio 1999, 44)

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What does it mean for dance to be in a position of maximal resistance, to be heralded as the site of maximal resistance to the space of virtual reality? This can be interpreted two ways: one is the disturbing and dualistic assertion that dancing bodies are the meat, the flesh in a base, organic, and natural sense, as opposed to the immaterial or phantasmic bodies of virtual reality. The other is the more subtle interpretation that the embodied arts are an electric location, an entwinement between the material and the immaterial, the organic, mythic, and even machinic, and that this very hybridity makes dance a fertile ground for the critique and development of our technologically obsessed culture. Paul Virilio is a respected interlocutor in the critical debate around this cultural obsession with technology. His intuition that dance resists the disembodied hype of much cyberpolitics and virtual rhetoric is sound, yet his translation of telepresence into the realm of the immaterial wherein the other is lost does not hold up in the face of performance experiments using telematics.<sup>4</sup>



106 Telematics is a term used to cover a range of systems that link remote locations: from fast, wide-bandwidth transmission technologies that can carry several streams of data simultaneously and produce slick and clear images and sounds; to slower videoconference systems that may deliver sound without lag but that instill a jerkiness of movement; to freely downloadable Internet telecommunications software such as CU-SeeMe, the grainiest, most delayed, and pixellated option.<sup>5</sup> CU-SeeMe can be downloaded for free from the Internet and operated with a domestic modem, telephone line, and small, monochrome digital camera. This last option was used for *Ghosts and Astronauts*, and, before it, for a performance link between Vancouver and London called *Multi-Medea: Exiles*.<sup>6</sup> The grainy, abstracted images and movement interruptions generate a very particular kin-aesthetic quality as well as a tenuous feel to the interaction, which was desirable for exploring the themes of exile, presence, and absence.

Virilio offsets the delocalization of the body intrinsic to telepresence with the physical and located presence of the dancing body—yet he does not consider the implications of dance and telepresence combined. He seeks to defend the spatial “here” against the rushing current of the temporal “now,” implying that the now dominates any technological context. In my experience, there is an undeniable “here” in telematic dance performance. It has qualities of the familiar “here” combined with a “here” that we have not encountered before. The essence of the “here and now,” of living and performing in the moment (with or without the intervention of computers), embraces the

FIG. 21 above, *Ghosts and Astronauts*, 1997



potential for inherent strangeness, unanticipated on the basis of prior knowledge. The merging of two remote locations as occurs through telepresence does not annul the "here," but it does render obsolete certain static spatial coordinates such as the Cartesian *xyz* axes that structure our understanding of depth. Instead of rectilinear dimensionality, depth becomes a factor of movement and the layering of bodies. The experience is further complicated since the depth felt and moved by the performers, in other words their perceptual experience, does not necessarily correspond to the depth seen and created by the lens of the camera. The "here" of telepresence is characterized by the confrontation between projection surface and the perceptual depth of interaction. An in-betweenness is integral to the experience: the space of the "here" is in between two-dimensional projections and multidimensional imaginary and physical interaction. When I perform via video-conference link I do not think of the other performers and myself as occupying endpoints; instead I have a strong sense that we can slide into the grainy, two-dimensional image, down an imaginary tunnel that links the remote locations. The engagement occurs as a pulling between locations that does not annul the "here"; it is twisted into a new and constantly transforming shape.

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What is the motivation for using telepresence in a performative context? It is not the desire to jettison our real bodies. There is no, as Virilio suggests, immoderate love of the virtual body at stake in choreographic exploration with telematics, although *moderation* is inherent in any process of movement that allows itself to be shaped and interrupted by digital data transmission. Moderation

FIG. 22 above, *Ghosts and Astronauts*, 1997



in the context of computers and remote geographical links becomes *modulation*, as in the modulation and demodulation performed by a modem. There is a constant process of deciphering involved, a constant need to interpret the code of the movement received and to respond to the disintegrating and recombining physicality that is generated. We need merely the vestiges of a human form to identify a face or a limb, we need only the suggestion of the line of a torso or a trajectory of movement to register the possibility for physical response. It is possible to respond even when not looking directly at the two-dimensional projection, as if by innate understanding of the flow of electrical currents from plugs and leads to equipment we register the lines and flow of interaction through cameras, computers, modems, screens, light, eyes, limbs, and imaginations. When the media is unstable, and flowing, it can be seen as a metaphor for bodies.<sup>7</sup> Unlike the tendency to impose a corporeal metaphor upon other practices (such as reading and writing), here the bodily metaphor does not come second: our physical, moving bodies make up the basis for understanding our interaction with computers. As such, the virtual body is not desired (and desirable) territory into which we escape, it is a modulation/demodulation of our moving, fleshly bodies. Physicality is the basis for understanding and negotiating digital abstractions, both virtual and otherwise, and technologically mediated experimentation allows us to expand upon the phenomenon of embodiment.

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**I do not work on the subject and the object—that is the work of the philosopher—but rather on the “traject.” I have even proposed to inscribe the trajectory between the subject and the object to create the neologism “trajective,” in addition to “subjective” and “objective.” I am thus a man of the trajective, and the city is the location of the trajectories and of the trajectivity. It is the site of proximity between men, the site of organization of contact.** (Virilio 1999, 39–40)

Trajectory, as understood by Virilio, is linked to proximity and community. When the truly dynamic quality of a trajectory is understood, we see its relevance to a moving art form such as dance. With constant movement—which need not be equated solely with speed, for we can follow a trajectory even through stillness—we have a constant interaction between bodies and the creation of space. Performances using low-bandwidth Internet videoconference links call attention to the never-ceasing flow of interaction among bodies, spaces, and equipment by means of consistent interruption. There is a shifting, juddering unpredictability to the movement of the image, and to the regular crashes or adjustments required for maintaining a link. Nothing is inert. The fragility of interaction across distances echoes the vulnerability of proximity. Reflecting this, one of the most frequently received comments was the unexpected vulnerability conveyed through the images

and the interactive setup of *Ghosts and Astronauts*. Proximity is not stable: it is not the easy and material alternative to telematics. As with any dualistic opposition, it is dangerous to simply equate physical proximity with intimacy and to set it off against distance, alienation, and telepresence. All interaction can be seen in terms of the negotiation of flow, the creation and rending of intimacy, the incredible capability of our bodies to read, respond to, and inscribe traces of physical engagement. Once the play of trajectories is identified in telematics, the menace of losing the other (one of Virilio's great worries) is less pronounced.

## DEVISING PROCESS

The inspiration for *Ghosts and Astronauts* comes from several sources, the first being the earlier telematic performance of *Multi-Medea: Exiles*. The second source is Merleau-Ponty's understanding of flesh that extends beyond the borders of our bodies and includes the entwinement of self and other; and the third unexpected, but incredibly valuable source is French choreographer Dubois's visual and written records of her physical experimentation in microgravity. Dubois worked with the French National Centre for Space Research for an extended period of time training astronauts to adapt to weightlessness.<sup>8</sup>

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The devising process for *Ghosts and Astronauts* took place across three stages: improvised studio-based exploration of movement principles derived from both Merleau-Ponty's philosophy and Dubois's experiences; improvisation across a videoconference link where computers, projectors, and all performers were located in one space but simulating distance; and finally improvisation through the link between The Place Theatre and Riverside Studios, with bodies and equipment divided between the two spaces.

It is uncanny to me how Dubois's experiences in microgravity converge with my experiences of telepresence in gravity. I have extracted and translated observations from her highly reflective phenomenological text "Gravité zéro, une danseuse en apesanteur" (1996) and interspersed them with a phenomenology of our studio process. Certain obvious differences between our situation and Dubois's work with the astronauts became reference points (our bodies were acted upon by gravity and we focused on the visual and physical interaction between dancers across two locations), but these were underpinned by tremendous physical resonances:

**It was necessary to put oneself in a state of dance, this is to say to concentrate on internal bodily space and the relation that this holds with the surrounding space as well as on the imaginary that emerges directly from this new body-space-time. The most important thing is internal transformation, with an impression of dilation. The place of internal organs is entirely modified. . . . There is a clouding of internal landmarks. (Dubois 1996, 61)**

Letting go of our expectations of the location and function of our internal organs was the goal at the beginning of all sessions. For long periods of time we would get ourselves to "float" in the studio. As much as possible, we released our sense of verticality, descending to the floor but not staying there for any long period of time. Nausea rapidly became the ever-present barometer of our success at transforming our habitual internal and external space. We were constantly battling a sort of seasickness, whether on our feet or suspended in harnesses. When we felt sick, we knew that our improvisation was taking us into new territory.

110 Focus became crucial to this work. Instead of simply phasing out of the visual into a soft internal haze, focus took on a new acuity and became shared by parts of the body beyond simply the eyes. We could focus with our kneecaps, our palms, our shoulderblades. This was a sensory remapping of the body, no longer following the apartheid of the five senses, which locates vision in the eyes, touch in the extremities, hearing in the ears. We physically experienced what the philosophical and physical research into synesthesia has revealed: the senses themselves are entwined, there is vision in touch, hearing in taste, scent in aural data, and so on.<sup>9</sup> Our bodies are far more sensually fluid than we realize, and this fluidity can be released through concentrated movement exploration:

**There is an acceleration of movements that begin with the extremities and travel toward the centre of the body, and in contrast a significant slowing of movements that begin at the centre of the body and travel toward the extremities. (ibid.)**

This was a valuable movement thematic for introducing a pattern of velocity unfamiliar to habitual bodily functioning. Initially it was difficult, for there seemed to be little sense to this variation of speed. It was surprising how rapidly we adapted to this new physical logic, however, and how it transformed our sense of engagement between internal and external space, including our awareness of the other bodies moving in space with us. Hanging in space, our arms would float out and away, leading with elbows, with shoulders, with fingers, then rapidly diving back toward the



torso, the impact causing a slight shift in location. A kinaesthetic awareness of the others in space (mediated through the videoconference link or not) caused a pull on our movement sometimes triggering a rapid response, sometimes merely a ripple. This movement thematic, which initially seemed concerned with velocity, became as much about depth as speed when performed by the dancers at once. Speed plus the interaction between bodies equals depth:

**It is necessary to create subjective references in order to have a relation with the external world. ... Once it is chosen it is possible to orient all movement around this point. It becomes a sort of subjective center of gravity.** (ibid., 63)

The ability to shift our centers of gravity (and to temporarily lodge them in a non-central location) produced a tremendous sense of liberation, but equally resulted in a loss of control over the direction and momentum of movement. Once subjective reference points were transformed, our bodily engagement with external space was scrambled. And since space is never empty, the question of how to interact with others was raised. In the light of this, Virilio's concern resurfaces: Is there a menace of losing the other? How can this remapped physicality radiate outward so that it is more than individual, solipsistic play with subjective references?

**When the body finds itself "free-floating," that is to say, when we do not touch the walls of the vestibule, gestures are slowed down; in contrast when pushing off from a wall we can move very fast, because gravity is not there to stop us. ...**

**Each movement initiates a completely unexpected shift in location.** (ibid., 61)

Dubois described how in weightlessness there is no such thing as touch, for touch becomes push and sends bodies off in opposite directions. Yet if a touch does not quite make contact but becomes a play across small distances, it avoids becoming a push. When the intensity of this not-quite-touching-touch is maintained, it can span long distances as well as tiny gaps. This is the touch of telepresence. It is also an echo of Merleau-Ponty's idea of the "touching-touched" where it is impossible to isolate the active moment of touching from the passivity of being touched. Dubois further observed that, for her, when there is no weight there is no emotion and our rapport with reality is mediated through weight. By improvising along the themes of touch, we discovered how to direct and pour our weight so that it spilled beyond our bodies, into space and across images.

The touching-touched became a play of focus, of physical intentionality.

**In weightlessness the spiral is total and infinite. It is the discovery of an extraordinary fluidity of movement...the revelation that everything in the body spirals. This spiral truly becomes a mode of communication between internal space and external space. (ibid., 63)**

Spiraling around our own axes. How many axes could we find? How many spirals? From the dizzyingly violence that sent us crashing to the floor, to the near invisibly subtle. How could we keep the focus and know exactly the path of the spiral that traveled through us at any given instant? The rotation of eyes, standing still, and thinking of DNA—are these valid bodily spirals?

Spiraling paths began from points of unstable equilibrium (Dubois's description: *équilibre instable*). A push to start would send the movement into unexpected directions, through which an alternative center of gravity took over (perhaps the kneecap, the outer edge of the femur, the back of the skull). The asymmetrical center of gravity immediately caused a spiral around the selected center, and in the course of the spirals the center traveled to other sites in the body. The spiraling action mapped out shifts in the center of gravity that in turn provided further unexpected impetus to the spirals.

Working with the camera introduced a whole new dimension to spiraling motion. The camera could spiral along with our movement, augmenting its speed or annulling it into a false tranquillity. The frame made movement that verged on being out of control seem banal, but could transform a spiraling motion into a journey across negative spaces, or spaces in between limbs:

**In weightlessness this direct confrontation between the subjective reference point and the spiral creates an interaction between the internal space of the body and external space. What is revealed is the space in-between: between bodies, between objects, between articulations. (ibid.)**

The engagement between us came about through an enhanced sense of the in-betweenness of the space; and the transformed sense of our own bodies that we worked toward through the devising process was assisted by continually redefining for ourselves what this in-betweenness meant. At various points it included the spaces in between our internal organs, in between limbs, in between self and other across space. Preventing our movement from reaching full extension also constituted an in-betweenness. Merleau-Ponty has suggested that "flesh" can be understood as a

"manner of being." It is not matter but rather "is the coiling over of the visible upon the seeing body, of the tangible upon the touching body" (1968, 146). Flesh extends beyond the borders of the human body, made up of human movement and activity of the senses but also of "a certain hollow, a certain interior, a certain absence, a negativity that is not nothing" (ibid., 151). It became useful to think of the space in which we worked in terms of this idea of flesh, meaning that we were no longer in a space using computers, but that we moved through the entire context and across the nebulous region between the two locations where our images traveled and were transformed.

## PERFORMANCE

Riverside Studios looked very different from The Place Theatre. Riverside was a working space with various performance experiments in dance and digital technologies happening simultaneously. In our corner the projection was high on a sloping white cyclorama meeting a white floor. Spectators sat, stood, or milled about. The computers shared the performance space. All operational components were laid bare. The camera people shared the space with the dancers. The Place Theatre offered much more rigid theatrical conventions. Audience members were urged to leave the raked seating and circulate from stage to seats, pursuing as many sight lines as possible. The black stage space was stripped except for a large cinema screen with perforations permitting through-vision, and onto which the live feed from Riverside was projected and seen from both sides. Viewers had the choice between seeing the projection with me behind the screen looking almost like a projection myself, or venturing behind the screen to see the same projection with me unveiled.

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Transcending the conventional audience-performer divide in this sort of work is crucial. Everyone implicated in the experimentation (from computer operators, to performers, to audience) generate their own meaning of the piece while it happens. Reactions to the project are not simply based on judgments of beauty or virtuosity; the act of responding is implicated in creating a new poetics and physical imaginary. A new performance aesthetic cannot be imposed simply by the devisers of the piece; it arises as an engagement among all participants of the event. To use another of Merleau-Ponty's terms, response is a dynamic entwinement, a chiasm.

There was more distortion and pixellation of the image transmitted from West London to North London for *Ghosts and Astronauts* than between Vancouver and London for *Multi-Medea: Exiles*.



The ironies of the Internet demonstrate how a geographical understanding of distance is irrelevant: we would expect that the greater distance would introduce greater interference, but this is not necessarily so. Remoteness or proximity in interaction is not a preset parameter but a variable shaped by the vagaries of the Internet and by how we respond to moving, pixellating, and recombining images. It is not true that it is easier to respond to full, clear images. Sometimes response is more powerful when a pixellated fragment is all that is offered. For example, in the section where Ruth Gibson and I work very close to the eyeball cameras, our images would often fragment with the image updating erratically, so that a piece of an eye or a mouth would be suspended, frozen, while the rest of the frame updated around it. Instead of this seeming disembodied, it evoked a strong physical response. How did we hold onto a connection with each other? There were choices to be made: I could look at her image in her projected window and engage directly, or look at the projected image of my body in my window juxtaposed with her in hers—this was inevitably different from the first option since my own image was delayed from my real-time movement—or I could ignore the projections and use a powerful imaginative sense of her based on intense concentration through the lens of the camera. There was another option for interaction, and this arose through the small torches we had strapped to our wrists and collarbones. The line of light could be directed at the camera resulting in a flare, or onto other surfaces (including floors, walls, or the projection screen itself) extending and throwing the shadow of hands and fingers, stretching touch.

The cameras and artists using them (Gretchen Schiller, Dominique Rivoal, Guy Hilton) were hybrid physical beings who danced with us and had an enormous impact on the process. The camera introduces its own movement vocabulary of pulling, spiraling, abstracting, focusing, overexposing, hiding, revealing, inverting, disintegrating, leading, chasing, tracing. It can make us fly, float, or fall. To begin the performance I was suspended in a harness with a tiny video camera taped to my right palm. There were strong movement implications. For the camera to pick up the elusive territory of spaces in between and to pursue a spiraling journey, my movement needed to be pared right down. Less became more. Big movement was lost or banal. Small shifts of weight or balance became more interesting. The objective was not to carve through space with acrobatic or virtuosic feats, but to feel the viscosity of the air and let this stickiness be captured by the camera. The image bordered on high abstraction, familiar body parts (hands, faces, feet) became landmarks from which to navigate. Our (both mine and the viewers') physical bearings were continually lost then reestablished, relying on visual perception but also a three-dimensional kinaesthetic sense. When the digital camera was introduced into the harness section, the visual effect of bodies floating in space was eerily

similar to archive film documentation of moon walks in the 1960s, or even of more recent telescope or satellite visuals. We hadn't intended to recreate familiar images of outer space, but by working from simple movement principles through the telecommunications equipment available to us we inadvertently generated an approximation of the iconic shape of the astronaut in weightlessness.

Ending with the theme of astronauts, it is possible to return to Virilio for another instance where his concerns converge with our experimentation. For him the great menace of our technologies of telecommunications and transportation is the shrinking of the Earth: "Many astronauts who orbited the Earth have experienced a sort of vertigo in their own relation to themselves. The conquest of space was an experiment on the delirium of losing the Earth—not the end of the Earth, but a loss of the mind" (Virilio 1999, 43).

The experience of vertigo, of delirium, of nausea is inevitable at the beginning of a new stage of physical-philosophical knowledge, whether in gravity or microgravity. I wonder if space travel has been the greatest enchantment of the twentieth century, not due to a sense of loss of the self or of the Earth, but because of the potential for an innate physical understanding of the expansion it entails.

ARCHITECTURES OF  
THE REAL

116 *Multi-Medea: Shrinkspace* existed as movement across overlapping spaces. It was a performative keynote address for Body Electric: An Electronic Art Festival in Vancouver (May 1997). As a mixture of dance performance and discursive presentation, it set in motion both physical movement and philosophical thought. As a blend of material presence and digital representation of images and texts, it played across degrees of presence and of absence. *Multi-Medea: Shrinkspace* was about four interweaving spaces: architectural, physical, computer, and psychic. This is the discursive component of the performance, extended to provide a deeper focus on computer, physical, and psychic space by drawing upon ideas from Lacan and Merleau-Ponty.<sup>10</sup>

Live performances that use digital technologies stir up architectural, philosophical, and physical attitudes toward space. In the 1960s the architectural theorist Sigfried Giedion wrote, "The problem faced by every generation is to bridge the abyss between inner and outer reality by reestablishing the dynamic equilibrium that governs their relationship" (1962, xix). What comprises an inner region, an outer region? Is our skin the boundary between the two? And what if establishing an equilibrium between inner and outer space is not the goal, but simply witnessing the gaps or dynamic disequilibrium between movement and meaning?

Architectural space can be seen as the space of buildings, of stage and audience, chairs, equipment and walls, and physical space as the span of arms, the arc of a leg, the moving between computer





and projections on a back wall. Physical space also comprises the space of internal organs and breath, the redness or blackness that we imagine to be inside our skin—is it dark inside our bodies? Computer space is the flat rectangular screen precariously offering up images, icons, and text. It is also the space of our “consensual hallucination” of virtual reality, as if a lack of spatial consensus would damage the integrity of our bodies of information (Gibson 1984, 5). The psychic space mapped by great psychoanalytic explorers is a dynamic mesh of energies dominated by the unknowable habitat called the unconscious, unfolding ambiguously, in the case of Lacan (1989), across realms he called the “Imaginary,” the “Real,” and the “Symbolic.”

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Traversing these spaces, the question to be asked is how they coexist. They cannot be distinct or mutually exclusive in the way I have just sketched them. They are not clearly defined as separate locations. They entwine. The space of bodies is also the space of architectural structures like buildings; the topography of the psyche merges with the mosaic of internal organs; and computer space is, in its own way, both profoundly physical and highly imaginary. The battle between consciousness and the unconscious shapes our travels through digital and physical space. These four interweaving spaces are part of our cultural symbolic and are set in motion by performance. With *Multi-Medea: Shrinkspace* the friction between these spaces, the disequilibrium and the gaps, are more important than their respective continuity. This performance is the awkward-fluid interweaving of bodily movement, images, and words.

FIG. 23 above, *Shrinkspace*, 1997

## A FLUX OF FINITUDES

Creators of buildings and meaning have long exhibited a schizophrenic attitude toward space, preferring, on the one hand, a Platonic-inspired belief that space is a vast, empty receptacle waiting to be colonized by habitable structures and thought: "Limitless and intangible, it is impossible to give physical limits to space. Space dissolves in darkness and evaporates in infinity." Yet on the other hand, many architects possess the intuition that "movement plays a decisive role in the perception of space."<sup>11</sup>

Experiments with performance and technologies do not begin with the idea of space as infinity. They aim to reveal the finitude of space. Space is lived, moved. It is constantly defined, challenged, and redefined. In its overdefinition it becomes almost formless—not due to being infinite or void but to being in a constant state of flux: a flux of finitudes. Finitudes equal limitations, so the preoccupation with shrinking space translates into a focus on small spaces, constrained mobility, and limited technology. Ironically, even the psychiatric connotation of the shrink is relevant since it is caught up with constraint caused by psychic mechanisms including repression, which can shrink our actions and thoughts into repetition, acting out, or neurosis.

*Multi-Medea: Shrinkspace* is a play of limitations, a reflection of working with dance and technologies in a constrained economic climate. This climate can be understood in ideological terms as the material, economic, technological, and aesthetic conditions that shape our work. Choreographic ideas exceed the limited resources available. Technology is expensive or scarce, and often unavailable to the choreographer. Frequently the hardware or interface required to implement an idea has not yet been developed. Funding bodies are confused by how to categorize proposals that involve the materiality of the performing body combined with the relative immateriality of virtual space. And all too often, artists who experiment with computers are often obliged to explain their deflection away from the "purity" of their art form. Still, there is increasing experimentation with digital technologies in performances of all sorts, from opera to installation by way of theater and dance. Dancers are not deprived of technology; we are limited by what is available to us.

An effective choreographic principle when working with technologies is not to resist but rather to turn our attention to our limitations. The strategy of "when limited, explore limitations" is more than a way to make a feature out of disadvantages. It is an acknowledgment of the material constraints

of a bowl of water and washing the red jelly off my face and neck. Food and inner bodily functions were thought to play no role in digital spaces. But is this true? Can't stickiness be conveyed? Jelly on the keyboard? PowerBook burps and hiccups?

Bachelard (1969) evokes "a first myth of outside and inside," lamenting how this deeply rooted geometry confers spatiality upon our thought.<sup>13</sup> The calling into question of digestive space in the context of digital images confuses the geometry that sustains this myth. A non-Euclidean geometry of curves and seeming inconsistencies is introduced. There can no longer be an inner and an outer space to bridge, because each space has both inner and outer qualities. And bridges are unstable, illusory, extending and collapsing.

The motivation for *Multi-Medea: Shrinkspace* is not to engineer an immersive multimedia event. As a hybrid between performance and presentation of ideas, it cannot possibly create a suspension of disbelief long enough for the audience (or even the performer) to escape into the flow of images and sound. It sticks. It has glitches and seams. I am the performer and the speaker. I fumble with a keyboard awkwardly placed on the floor, and the shadow of my computer-curved body blocks the projected flow of images and text. I operate my own sound system. The goal is to expose the simultaneous coexistence of these lived spaces and to probe the limits between them. What lies between computers and bodies, bodies and thoughts? Is there an "in-between"? And why be concerned with this between-space across a spectrum of spaces?

#### SPATIAL RELATIONSHIPS ARE THE REALITY OF MYTHS

Dance and architecture share basic spatial building blocks: public space, bodily space, movement, psychic space, and the intimate space of interaction between one person and another. All of these make up the mythic space of a culture, so that ultimately, when we construct a building, as when we create a performance, we are adapting and reworking the mythic or symbolic order within which we live. We are situated within fluid and active mythologies that are ever-adapted by our thoughts and actions. Myths didn't just happen in the past; they happen now. Understanding mythmaking in terms of spatial relationships of bodies and thought is one way of articulating the contemporary practice of mythmaking.<sup>14</sup> Myths become stripped of their high art connotations. Instead, they involve the simple play of presence and absence, of the appearance and disappearance of bodies, identities, and places.



*Multi-Medea* is mythological, not a direct evocation of the Medea myth, but a deliberate reference to the contemporary practice of mythmaking surrounding bodies and technology. The Medea figure occupies a unique position of horror and fascination in our Western cultural imagination. From classical Greek mythology we learn that she murders her children, betrays her father and her state, and uses sorcery to enact a brutal revenge upon her husband. She seems to selectively weave both natural and cultural laws into her own bloody tapestry. She exhibits an alternate ontology, ethics, and set of physical abilities. In contemporary terms, she may be an alien, or a cyborg.<sup>15</sup>

### THE REAL IS THE VIRTUAL

*Multi-Medea: Shrinkspace* is a phenomenology of a performance occurring simultaneously with the performance itself. The phenomenology and the performance unfold across and through each other. Despite the situation of some cyberculture and theory within the exaggerated postmodern rhetoric of the arbitrary nature of signifiers and fragmented narratives, there is a strong role for a phenomenological approach to dance experimentation with digital technologies.<sup>16</sup> There is a need for an embodied narrative, which may or may not be fragmented as we experience it, but which provides a valuable counterpoint to purely visual or design approaches to technologies. By exploring choreography through technologies we are transforming our experiences of space, time, and materiality. We therefore are transforming our kinaesthetic knowledge and grounds for interaction between beings. The word *transformation* is used deliberately rather than the word *elimination*. It is not necessary to accept the first-generation cyberhype concerning the elimination of the body, gender, and community. We are not facing a tabula rasa—our location is more complicated. To understand where we find ourselves we need to set in motion a fluid and continuous form of philosophical questioning that occurs simultaneous to our physical experimentation with the technologies. To understand, respond to, and develop these technologies of the body, we need to do our own phenomenologies. Since work like *Multi-Medea: Shrinkspace* emerges from gaps between existing practices and discourses, phenomenology is performed from the fissures—a phenomenology of the abyss, of the neither-here-nor-there.

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This will involve, if not a reconciliation, at least a détente between phenomenology and psychoanalysis. Merleau-Ponty has sketched a mutual encounter for phenomenology and psychoanalysis (1993, 69). Together phenomenology and psychoanalysis can acknowledge the lived reality

of psychic activity in an intersubjective world shaped by history and culture. Phenomenology assists psychoanalysis by recognizing the embodied reality of psychic activity and fantasies. Psychoanalysis assists phenomenology by confirming that the psychic representations that make up consciousness are not merely a play of images or concepts, but are investments of desires and actions (*investissement*). It is true that Merleau-Ponty refers to Freud. To make things more difficult I refer to Lacan, who does not follow Freud's system that comprises the biological, neurological, and physiological. Lacan draws the debate away from the body, preferring to focus on language and the three structural registers of human reality: the Symbolic, the Imaginary, and the Real. It is the Lacanian Real that is of interest in this discussion of space, in conjunction with Merleau-Ponty's idea of flesh (*la chair*). The Real provides a basis for interpreting gaps that begins with, but extends well beyond, psychic space. What Lacan finds problematic about the Real (that it exists outside the Symbolic order and the subject, that it is the domain of psychosis, death, inexpressible pleasure, and sexuality) is precisely what makes up its aesthetic and political potential (Benvenuto and Kennedy 1986, 82, 166). Flesh provides a basis for translating the Real into physical experience across a range of materialities.

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#### So where is the Lacanian Real?

The Real is that moment when your computer crashes and your heart stops, when your heart stops as your computer crashes. It is that glimpse into the amorphous beyond out of which your ideas emerged and into which they are swallowed when your computer crashes.

Investigating the Real is notoriously difficult because it is made up of the gaps that shape our experience, the silences between sounds, the spaces between the filigree of existence. Even discussing the Real is next to impossible because it evades language; it "cannot be spoken about for it does not belong to language. Even though he may speak, the subject is not allowed to know about his beginnings; he can only describe a chain of discourse around the Real which always slips away from it" (ibid., 186). Slavoj Žižek's strategy for grasping the Real is to draw upon analogies from science fiction. A novel by Robert Heinlein entices us to view the Real "as a grey and formless mist, pulsating slowly as if with inchoate life" that lies just beyond the windowpane of a car driven by an unsuspecting driver. When the window is rolled up life as usual appears, and when the window is rolled down contrary to strict instructions not to do so... there is nothing but a dense grey mist indicating that the universe is being recalibrated. The Real is the horrifying underpinning of reality.

Žižek writes: "What is crucial for us here is the place from which this real erupts: the very borderline separating the outside from the inside, materialized in this case by the windowpane" (1995, 15). Performance using technologies emphasizes how this borderline between outside and inside is porous and ill-defined.

*Multi-Medea: Shrinkspace* was created between crashes of a very buggy PowerBook. Working under the whims of a capricious ruler, ideas took shape during the precarious gaps, never knowing what would remain and what would be lost. Gaps of time (sometimes up to an hour, sometimes only ten minutes between the freezing and crashing) became equated with highly unstable spatial segments of text and images. I forged my own understanding of Michel de Certeau's claim that "upheaval is already a part of the document as it falls into our hands" (1988, 254).

Like the crashes of a computer, the Real is beyond the Symbolic order (*hors symbolique*), beyond language. It makes its presence felt through a visceral, nonverbal state of unease; it is defined as impossible to symbolize, to mediate, to speak or to write; it does not speak and has no name; it is situated outside language and the symbolic order, yet this order could not exist without it. In a sense it is "the foundation of the process of symbolization... [it] precedes the symbolic order and is subsequently structured by it when it gets caught in its network" (Žižek 1995, 169). The Real is excessive. It has been avoided by most theorists in favor of discussing the Imaginary or the Symbolic. If Lacan's Imaginary has been challenged and extended through film theory and criticism, then the Real is the region relevant to mixed-media performance work. I sketch three reasons why. The first is that the Real is outside the symbolic order, and when we make new work we seek to change the symbolic order by drawing in something as yet unseen or unexperienced, by inserting a moment of disequilibrium. This moment of disequilibrium comes from a gap, from outside the confines of our preexisting symbolic order; it comes from the experience of "not-being" upon which human knowledge is built (Benvenuto and Kennedy 1986, 186). The second reason addresses Lacan's situation of women as bearing the ontological burden, or task, of representing and incarnating the Real. Much experimentation with dance and technologies has as a goal the construction of alternative genders. An effective feminist/queer/anticolonialist strategy is to work from the position of the Real. This is consistent with Peggy Phelan's strategy of unmarked performance, and her affirmation of a position outside visual representation as being one of political power. She seeks to break the connection between visibility and political power, believing that to remain unmarked and politically active is to undermine the symbolic order from a position that cannot be subsumed: "The binary



between the power of visibility and the impotency of invisibility is falsifying. There is real power in remaining unmarked" (1993, 6). To use the technologies of visual representation such as computers and projectors in such a way that they do not conform to standard practices and norms of visibility (as found in television, film, advertising, journalism) is to implicitly pursue a strategy of being unmarked, to work from the Real, the gaps in our linguistic and visual repertoire, and to etch new political and aesthetic parameters. Unmarked need not mean invisible, but "differently visible" across layers of transparency and opacity.

124 The third reason for suggesting that the Real is relevant to the zone of interface between bodies and technologies inhabited by performance is that the genealogy of the cyborg can be traced back to the Real. Lacan calls the Real "menacing" because it escapes verbalization, order, and formalization. The Real is a threat Lacan tries to avoid or trap in a cage of language, but despite these evasive or predatory measures he is drawn irresistibly toward it as to an apocalyptic or abject vision (Marini 1986, 54). The vision is apocalyptic because it challenges the protective divide between nature and culture, and for Lacan there must be a radical break (*coupure radicale*) between them (ibid., 80). Therefore the Real is somehow monstrous and ill-defined because what it inspires does not conform to the protective barrier that separates nature from culture. The cyborg heralds from the Real—an object of horror but of intense attraction. Lacan has even suggested that the Real is more mathematical than corporeal, and he can do nothing but inscribe it in an algebraic series. If we consider the Real to be the home of the human-technological hybrid, we begin to understand the hysterical and schizophrenic attitude toward computers in our culture; we see a source for the phobias and obsessions that technology engenders. Lacan has bizarrely associated the Real with both women and the mathematically nonhuman—in the light of this I can't help but think of one of the twentieth century's first portrayals of a robot/cyborg: the woman in Fritz Lang's *Metropolis* (1927). This horrifying creature threatened the fabric of society and the heart of the male protagonist. Gold and gleaming beneath her skin of civility, she was politically persuasive, socially destructive, and sexually voracious.

Lacan has called the Real "impossible" and, when discussing it, his discourse shifts to a metaphorical or prophetic style, or to tones of declamation, warning, or derision (Marini 1986, 79). If the Real is impossible to think or to verbalize, then can we not take a different approach—can we not experience it? This is not to set up a dichotomy between language and experience, but to suggest that the two can occur simultaneously and generate both new experiences and new frameworks

Up until now I have discussed architectural, physical, computer, and psychic spaces, stressing that they are interweaving but realizing that discourse often separates them. In flesh we discover a concept/phenomenon that contains these four spaces without first separating them. Just as the physical flesh of each person's body holds limbs and organs together, forming a unity of multiplicity, flesh is the cohesion that embraces the many spaces of subjects, objects, and the world. Translated into the performance space, flesh embraces the technology, the bodies, the movement, the music, the images, the psyches, the structures...there is no need to hide aspects of the process, for all is performative, all is flesh. It is an intricate filigree, or "network," of the material and the immaterial.<sup>17</sup> As we live this filigree, we slip between its threads, we fall into its gaps.

Unlike Lacan, when Merleau-Ponty discusses a concept that is fundamentally impossible to capture in language he shifts his prose toward the poetic. He offers us images, metaphors, and above all a dynamic flow that transcends the words and speaks physically. Flesh is the ultimate understanding of space as a non-void flux of finitudes, as a syrupy substance that contains and composes all our movement and perceptions. Far less life-threatening than the Lacanian Real, flesh is an affirmation of the viscous nature of our living, breathing, and even technological environment, where all is an extension of all, through disequilibrium and dehiscence. If the Real imposes itself upon us when our computers crash, flesh is where we find ourselves when we push at the limits of the material and the immaterial, of the inside and the outside; when we use technology to make things sticky.

## LEFTFLINK: ON VOICE AND IDEOLOGY

Dancers, producers of dance, and audiences are seduced by the prospect of seeing dance as an art form evolve through collaborations with computer programmers, multimedia designers, and digital artists. Dancers, producers of dance, and audiences are also alienated or disappointed by these same collaborative projects. It is time for an ideological analysis to find out why this is happening and what can be done about it.

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Not all dance and technology collaborations are successful. In fact many are pretty awful, for all concerned. Frequently choreographers and dancers walk away from an attempt at a collaborative project feeling frustrated that the quality of their movement and their choreographic ideas suffers from the clash of aesthetics caused when bodies and digital images collide. Just as frequently, the digital artists walk away feeling that they have been transformed into nothing more than the technicians (or "geeks") who follow orders, losing their personal creative input in the process of making the computers work. The audience often walks away from a dance and technology experiment feeling cheated of a "real" performance, or at least confused by what happened and very worried that dance as an art form or tradition cannot survive the digital onslaught.

Aesthetics, poetics, philosophy, and criticism notwithstanding, when the practical conditions of production and reception of an artwork, combined with the power structures and tussles over meaning and voice, take center stage, an ideological analysis is called for. We can write about the





marvelous overlap of physical and digital bodies, but, without a rigorous understanding of the ideological underpinnings of this hybrid art form, it will take dancers longer to overcome the growing pains and to finally get onto the exciting and inspiring work of creating new movement vocabularies. Ideology, of necessity a contentious term, is a matter of practices entangled with politics, meaning-making, and material conditions of life. Terry Eagleton locates ideology at the juncture of power and meaning, saying that it "happens wherever power impacts upon signification, bending it out of shape or hooking it up to a cluster of interests" (2000, 108). Ideology is wily and shape-shifting; it permeates the highly abstract and is embedded in the most concrete cultural forms, from ideas, values, and beliefs to cultural institutions and artifacts (Wolff 1993, 54-55). In this discussion, ideology refers to the structures within which we act and think, explicitly the awareness of dance-making as a convergence of material processes encompassing the social and economic conditions of its production and reception; but it also pertains to the structures for meaning-making, and this is where a consideration of voice resides. The structures for meaning-making are particularly important when they are contingent upon writing about dance that appears in the media, such as journals and newspapers. Three ideological components will be discussed: the role of the producer; the response of the audience; and the circulation of ideas, reflections, and critique in the media following an event.

FIG. 24 above, *Liftlink*, 1997



#### CREATION, INFORMATION, AND CONTROL

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*Liftlink* (1997) took place in the car park and lift (or elevator) of The Brighton Media Centre (U.K.). It was an exploration of confined and open spaces, both architectural and personal, across a real-time telematic link.<sup>18</sup> Three dancers in the lift of the Brighton Media Centre performed with one dancer in the car park just outside the entrance to the lift. The image of the dancers in the confined lift space was sent by a wireless video transmitter and stretched into a huge projection on the back wall of the car park. The image of the performer in the car park was sent back to the lift, projected on its ceiling. The performance space expanded to contain the wanderings of the three hundred or so viewers: audience members could roam from the car park, up the stairs circling the lift shaft, to the cubicle of the lift stopped on the first floor. From the first floor a band of windows offered views of the car park and the many visual and physical interactions below. The performance happened at midnight.

One would imagine *Liftlink* to be well situated in a street art festival since it was deeply social and involved innovative use of public spaces. Yet the choreographic motivation and performance context had a tense relationship. The motivation for the piece was an exploration of confinement and openness, connection and lack of connection through the visual link and projections. Choreographic questions included whether the group entangled in the lift might be more strongly in contact

FIG. 25 above, *Liftlink*, 1997



130 with the lone dancer in the projection than with each other, and related to this whether confining movement also could be liberating by being a protective shield or by using physical pressure to open space within the body's skeletal structure. Explicitly taking the technologies into account, the movement experiments asked whether the invasive eye of the camera was the extension of gaze that allowed a performer to project herself into the remote location, and what it might mean for a body to be porous to the gazes of audience, cameras, and other performers.

Ironically, for a piece that was about the connection and lack of connection between dancers through technology, there was both a connection and lack of connection with the audience. The audience was reluctant to wander and, for the most part, ignored the projections and the dancers in the lift. The loud, drunken debates over whether the piece was art were predictable (and welcome). The indignation over there not being a clearly defined start or end to the piece revealed that conventional theatrical expectations overflow the physical structures of the theater and permeate outdoor site-specific events. A fierce debate over the nature, role, and function of the producer in the context of dance and new technologies erupted. This was unexpected but highly relevant: when new artistic ground is opened new protocols for creation, control, and meaning-making need to be assessed.

FIG. 26 above, *Liftlink*, 1997





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The producers' professional positions seemed to revolve around several points of view. One: the responsibility of the artists is to make the work accessible to the public. Two: the responsibility of the producer is to facilitate the artist in making the work accessible. Three: the responsibilities of the producer and the artists are to collaborate on the presentation of innovative and groundbreaking work that actively supports the evolution of the art form. Underlying this debate is the flow of information, and the power to either withhold or demand this information. Even in an artistic setting information is a commodity and an implement of control: To what extent do producers of dance and technology hybrids need to provide detailed explanations of what is happening in these multisite or interactive performances? To what extent does the audience need to be assisted over the hurdle of confusion that is inevitably thrown up by new work? Do the artists have a say in how the work is explained, before, during, or after the event?

The *Liftlink* audience had been informed that it was important for them to circulate from the lift to the car park, but many chose not to. For a small percentage, the result was confusion, disdain, apathy—not to mention unpleasant heckling of the dancers in the lift. If they had been told about the lines of interaction in greater detail perhaps their responses might have been different, but an important question to arise is whether a favorable response is required. For many performers' egos: yes. For many producers and funders: yes. But if dance and technology collaborations that fall outside existing definitions of what constitutes a "good" dance performance are to continue to

FIG. 27 above, *Liftlink*, 1997

break new ground, what is needed are intrepid producers who might risk an ambiguous audience response. (Fortunately ours were.) Confusion is powerful and is endemic to much hybrid work, whether the work is a hybrid of dance and computer technology, music and architecture, or robotics and puppetry.

Thus said, there was much that could have been done with *Liftlink* to facilitate a "way in" for the audience. In the world of art galleries this tends to be provided by placing white index cards containing relevant details and authoritative interpretations on the wall next to the work. I do not think this is the best strategy for performances such as *Liftlink*. Instead, a way in can be woven into the fabric of the piece while it is being devised through the input of a dramaturge. In stark contrast to British and North American conventions, many European dance companies work with dramaturges (De Keersmaeker, Nadj, and Forsythe, to name a few). Coming from various traditions of theater, both avant-garde and classical, the dramaturge operates among the director, the playwright, and the set designer in a fluctuating but utterly crucial region. A dramaturge takes into account the relation between the performers and the audience, the flow of the piece, the translation of theatrical intentions across performers on stage, and the evaluation of the effectiveness of the overall staging in achieving intentions. The dramaturge asks fundamentally ideological questions relating to the meaning of the piece, the engagement of the audience, the social impact of the physical configuration of the space; she pragmatically addresses how the intentions of the artists can best be achieved by means of movement, words, gazes, and emotional energy, but also through the less animate building blocks of set, costumes, lighting, and layout of the location holding the performers and audience. A dramaturge assists in the construction of the space of theatrical interaction, and a good dramaturge is not afraid to question the intentions of the choreographer or director.

#### WRITING UP A STORM

In many ways *Liftlink* was a fabulous failure, only enhanced by our (somewhat illegal) wireless video transmission picking up a minute of a local television station and projecting a late-night chat show instead of the dancers in the middle of the performance; but it was fascinating to write about, and I did so, considering aesthetic and ideological questions around the production and reception of non-proscenium, technology-facilitated dance experiments.<sup>19</sup>



The confession to be made at this point is that I was the dancer in the car park. Not a shocking revelation, it must be said, but one that caused a tense debate with the editor of a prominent European dance journal. My proposed article was enthusiastically accepted for publication by that journal, until the editor learned that the author was also the choreographer and a performer in the piece. This prompted expressions of disapproval and a moralistic rejoinder: "It seemed that you are a multimedia author [instead of a choreographer]. In this profession you should know that there is no propaganda (even self-critical) allowed."<sup>20</sup> He refused to print it on the grounds that art needs independence, and that this independent point of view can be obtained only when we review colleagues, according to the existing ideological structure of knowledge-making, but not when we speak for ourselves. "How dare you," he admonished, "submit this for publication."

This exchange reflects opposing views concerning the dissemination of information, and, in broader philosophical or academic terms, the construction of knowledge or truth. Two questions arise: If artists write about their own work, are they furthering critical debate or indulging in ruthless self-promotion? If dancers draw upon the knowledge and experiences of their bodies in performance, are they creating subjective fictions that have no relevance beyond themselves? In a seminal article from the 1970s on culture, media, and ideology, Stuart Hall (1977) indicated three functions performed by ideological cultural processes: masking, fragmenting, and reuniting. As an example of both masking and fragmenting, media assign a "place or a particular status" to people, things, or ideas and indicate "either their acceptability or carry out the work of exclusion, of downgrading certain aspects of social reality" (Billington 1991, 164).

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From an ideological perspective concerning the production and reception of work, several social and economic roles emerge out of this debate. There is the artist who makes the work, the critic or reviewer who writes about the work, and the editor who makes publishing decisions based on evaluating the quality of the performance and of the writing based on it. Ideological confusion ensues if the roles are disputed, shared, or undermined—in this case by a dancer who might want to write, quite critically, about a creative process and performance. This situation is well addressed by the classic feminist formulation of "what if the object begins to speak?" In this case, the object is the performer who risks being voiceless, trapped within her body because her words might be corrupted through her physical experience. Obviously the situation has its contradictions and complexities. Editorial policies for preserving independence and high standards of writing in the arts are valid, but they become a highly political issue when they are used to silence an embedded,



embodied perspective in the interests of a de facto "truth" that can only be derived from an objective observer. Philosophers such as Irigaray have chronicled the chaos that ensues regarding language and truth structures should the object create her own language: "In other words, the issue is not one of elaborating a new theory of which woman would be the subject or the object, but of jamming the theoretical machinery itself, or suspending its pretension to the production of a truth and of a meaning that are excessively univocal" (1985, 78).

134 Dance has tended toward being a silent profession, letting others speak for the dance and dancers. Huge inroads have been made in coaxing dancers to speak out about everything, from training conditions to aesthetic principles to the intricacies of choreographic process to their personal health, but still the most common written form for hearing the words of a choreographer or dancer is the interview where the interviewer's voice provides the framework and a sense of authority.<sup>21</sup> This is not to say that all writing from the first-person perspective is to be defended on experiential grounds. Bad and biased writing can come out of artists as easily as it can come out of critics. At stake here is the myth of objectivity. *No one is uninvolved*. All those who experience a piece—performers, audience members, stage managers, journalists—do so from their own culturally situated positions, their own preferences, histories, bodies, and connections with the art world. Nor is this to say that dancers must speak for themselves, or be forced to speak at all. I have argued to overcome the exclusion of the performer's perspective from discourse and identified this as an ideological issue, but the mandate or obligation to only ever write from our own point of view is equally ideologically suspect and exclusionary. Margaret Atwood articulates this concern: "There's been a certain amount of talk lately about who has the right to write what, and about whom. Some have even claimed that a writer should not write about anyone but herself, or someone so closely resembling her that it makes no never-mind. What was previously considered a weakness in women's writing—solipsism, narcissism, the autobiographical—is now being touted as a requirement" (2001, 145).

Illumination of the creative process and transformation of artistic and social practices can come from all perspectives, and indeed, regarding dance and technology collaborations, the voices of all need to be heard. With any hybrid art form the innovation not only has to do with the creative process, but also has impact on processes of production, funding, dissemination of information, and construction of knowledge.

In asserting the need for new social and intellectual protocols around the creation of work and ideas, I suggest that a new ethics might be called for. By ethics I do not mean a register of good and bad conduct. Such a register is already at work behind the judgment that it is good for a critic to write about a choreographer's work and bad for a dancer to write about her own work. In developing an awareness of the ethics of performance, we can take inspiration from Levinas and we can wrestle with Merleau-Ponty, for the latter's position regarding the other provokes considerable discussion. We can also turn first to English theater scholar Alan Read's *Theatre and Everyday Life: An Ethics of Performance*. For him, the space of theater is a space of ethics because both exist through relations between self and other. Discussing an ethics of theater "is to value the power of theatre to affect life, emotionally and biologically, and with this belief in theatre there is responsibility to ask how it does this and to what purpose" (Read 1995, 89). Once the creation of work is regarded from an ideological or an ethical perspective, it is impossible to overlook its social and political implications. Technology is not just about computers, and movement is not just about dancing bodies. Both are about communication across people in a rapidly advancing technological age in which the relations traversing bodies, art, image technologies, and the marketplace need to be continuously evaluated and changed if necessary.

# THE EXTENDED BODY: TELEMATICS AND PEDAGOGY

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*I'm aware of my body in a poised and anticipatory posture, for a moment it seems as if I am living through my eyes, scanning the hesitant and unpredictable offerings of the windows  
my center exists somewhere between my body and the computer screen, between my screen and theirs  
where is the locus of my movement?*

*the image is slow, I've lost her, no she is still there  
I'm waiting for a response that fits into my usual movement paradigms, my usual rhythms, but this is not what I'm receiving  
are my movement and choreographic habits, perhaps, exactly what I should be suspending?  
what am I actually receiving?  
what is this telematic "now" that I am in?*

*then the bodily movement contained in the windows shifts, spills out of the borders of the square boxes  
unexpected patterns break through the fabric of my emerging choreography, visual angles reconfigure and I find myself reading across and between the windows  
the difference in my own visual feed from what I am consciously offering captures my attention for a moment*



The limits of possible spaces are the limits of possible modes of corporeality: the body's infinite pliability is a measure of the infinite plasticity of the, spatiotemporal universe in which it is housed and through which bodies become real, are lived, and have effects.

—ELIZABETH GROSZ, *Architecture from the Outside*

*I notice the rhythm and counterpoint that emerge across my window and those of the others  
I find myself choreographing the visuals and my own body in physical space  
following the rhythm generated by the update speed over which I have no control*

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*it seems that gaps, trajectories, and "in-between spaces" are more important than what is direct,  
focused, and frontal*

*(phenomenology of an iVisit movement improvisation)*

The last section of this chapter on telematics approaches the topic from a somewhat different angle to reflect upon an experiment in telematic pedagogy. Many artists working, thinking, and writing about how bodies converge with computational systems of all sorts teach in universities or art colleges coincident to making work. In the best circumstances, what is discovered in the studio and the lab is brought into the classroom, often with vibrant effects. What I am referring to as telematic pedagogy is sometimes conflated with e-learning or distance education. While there may be some similarities, each modality also has a different set of priorities. My priority is with providing a technologically mediated extension to studio improvisation and to seminar discussion; both fundamentally real-time learning contexts. The experience of teaching dance across continents using personal computers and small cameras reveals to a deeper extent some of our physical, cultural,



138 and perceptual habits regarding computer-mediated exchanges. Once again a leitmotiv of this book emerges: how the artistic-embodied experience of dance can be a lens for examining wider cultural usage of technologies for human exchange. This chapter's combination of phenomenological and heterophenomenological methodologies (speaking from my own experience but allowing those of others to have a voice too) benefits from a theoretical framework constructed in dialogue with Jonathan Crary's thoughts on perception from *Suspensions of Perception* (2000) and Hubert Dreyfus's comments on the Internet and education in *On the Internet* (2002). On a more pragmatic level, this chapter offers strategies for creating coherent kinaesthetic dialogues across low-bandwidth telematic connections using improvisation techniques, and for combining these physical exchanges with real-time seminar discussions.

This discussion is centered on a master's level course and two related workshops. The Extended Body course was an experimental educational project in online and live performance drawing together a range of performance-making practices and practitioners through a real-time, synchronous videoconference platform. It linked physical spaces at the University of Surrey (U.K.), New York University (U.S.), Arizona State University (U.S.), The Banff Centre for the Arts (Canada), and the Technical University of British Columbia (Canada), but its main home was the online space of iVisit videoconferencing application.<sup>22</sup> Inspired by the movement improvisation components of the Extended Body course and informed by my own telematic dance performances, I constructed

FIG. 28 above, The Extended Body, workshops, 2001



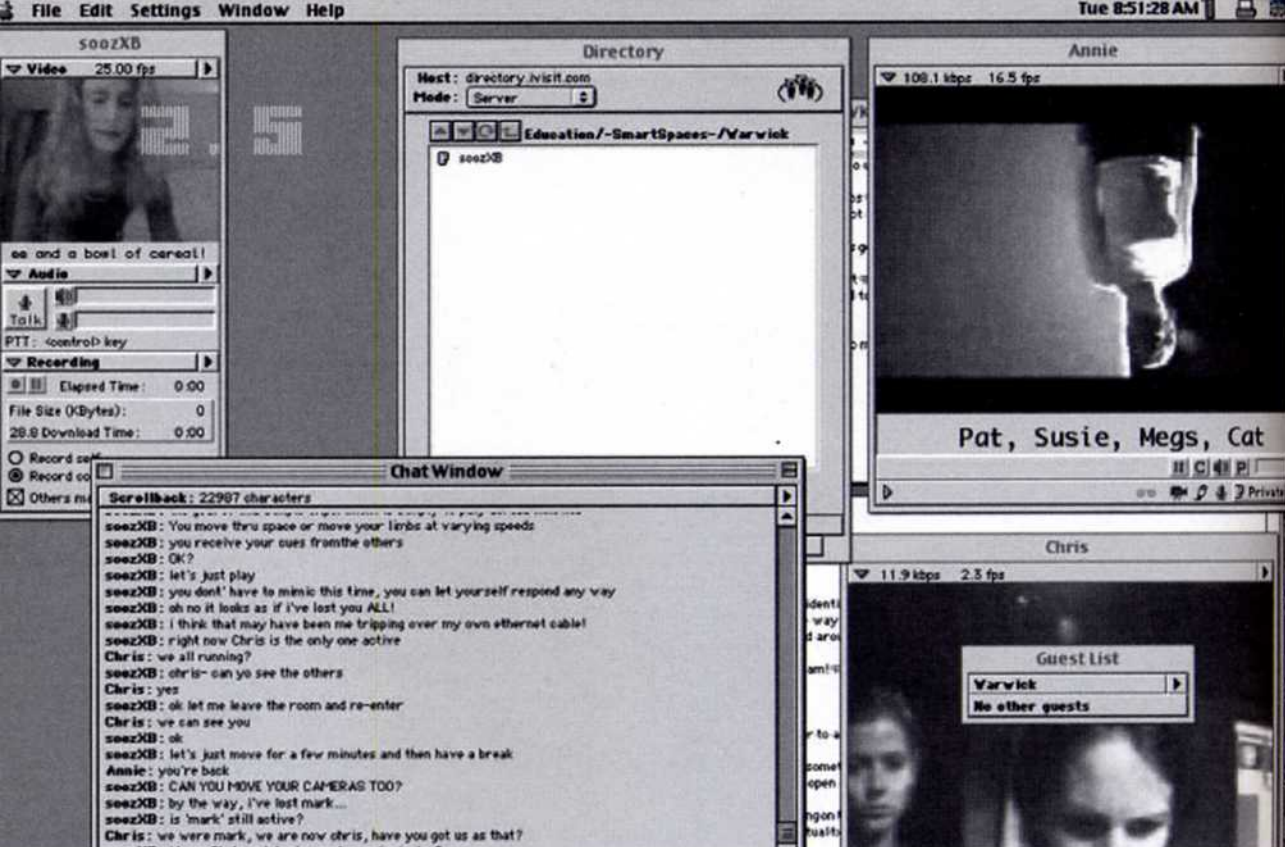
a series of workshops focusing specifically on shared movement improvisation, choreographic composition, and the aesthetic and philosophical implications of the practice. This section focuses on two specific workshops, one with undergraduate theater students of Warwick University (U.K.), and one with master's of arts in dance students of De Montfort University (U.K.). iVisit and basic webcams running on Macs or PCs were used; I joined the groups in England from Vancouver.<sup>23</sup>

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Both the design of the Extended Body course and the creative output can be described as the result of transverse processes. These account for the lateral shifts and changes that several disciplines have on each other when they are permitted to be porous, rather than rigidly juxtaposed. Elizabeth Grosz asserts that "any understanding of bodies requires a spatial and temporal framework"; "conversely," she continues, "space and time themselves remain conceivable insofar as they become accessible for us corporeally" (2001, 32). This formulation has a nice Merleau-Pontian feel, as it is an articulation of a dynamic of reversibility: we need a framework of space and time to understand corporeality, but corporeality then alters and shifts this initial framework. There are no fixed *a priori* in a porous exchange between disciplines. Any implicit formulations of space and time offered by our technologies yield a corporeality, or a range of possible corporealities. In other words, our computational interfaces are never physically, spatially, or temporally neutral; we confront them with a set of assumptions and they become morphed. Corporeal modalities always unfold from the experience of engaging with an interface, but what is not obvious is that their

FIG. 29 above, The Extended Body, workshops, 2001





140 impact extends beyond the time we spend using the computer. We carry physical traces of our computational experience with us as we walk around in the world doing other things. By using the Internet to craft choreography or to create movement dialogue, we shift the spatiality and temporality both of Internet usage and of the studio practices of the dancers. This is a germination of new behavioral, perceptual, kinaesthetic, or conceptual practices.

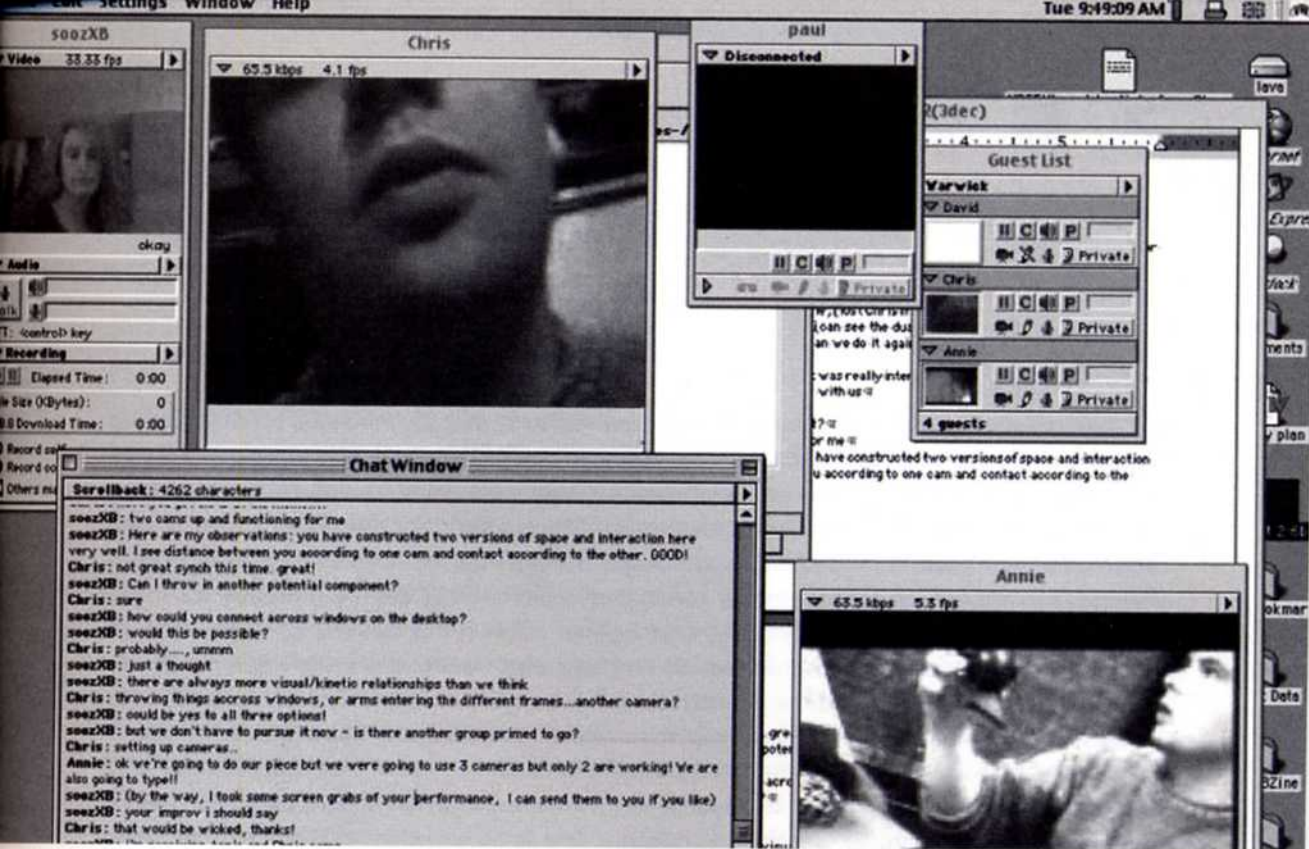
## RECONFIGURING THE FIELD OF ATTENTION

The notion of attentive presence was recreated amid the impact of new conceptualizations and organizations of motion, memory, and temporality, including emerging technological arrangements.

—JONATHAN CARY, *Suspensions of Perception*

The act of creating a kinaesthetic and dynamic connection with another dancer through the Internet opens up a set of related perceptual modes that are not confined to vision. Without reflection upon these altered modes of perception and a clarification of their scope and function so that the experimentation can progress to its next stage, the experience can founder in confusion and a sense

FIG. 30 above, *The Extended Body*, workshops, 2001



of unmet expectations. Paul Rae, speaking from a theater perspective, suggested that telepresence occurs more as a possibility than an actuality. I believe he said this with a sense of disappointment, as if the reality of his telematic experiences did not live up to his expectations. Reflecting upon the potential versus the actual in the space of technologically mediated human connectivity, I began to wonder whether what he suggested was not true of much human communication—that communication, and indeed perception, occur in the fragile region of the potential rather than the seemingly concrete realm of the actual. The hype that colors our expectations when we deal with computer applications conditions us to expect perfection in handling digital technologies, and is based on the consumer marketing ideals of easy to use, error-free, seamless reproduction of reality. Thus, if our telematic experiences are less than spectacular, or if we encounter technical glitches and difficulties that shatter a cinematic suspension of disbelief, we are inclined to say that they are flawed, or simply that they did not work. I suggest that irregular and interrupted efforts at telematics exhibit challenges for human connection similar to those encountered in daily, face-to-face encounters, and that it might be more productive to examine, as proposed by Jonathan Crary, “attentive presence” or the “field of attention” as a framework for evaluating and understanding the experience of our telepresence exchanges (2000, 282).

If telematics exist in part as a potentiality rather than an actuality, the terms of the debate are shifted toward process and performance and away from a steady state of connection; to a verb

FIG. 31 above, The Extended Body, workshops, 2001



and away from a noun. Echoing this shift from noun to verb, digitally mediated communications can be construed as *processes* of connecting, *intents* to achieve proximity, and *attempts* at touching, rather than the accomplished states of communication, proximity, and touch. The difference is subtle but significant. It recognizes that human communication is not a seamless fusion of "data transmitted" with "data received" even when people are physically co-located. Presence contains absence, and connection consists in the continuous negotiation of barriers, misunderstandings, swaying to-and-fro of affect, meaning, and physiological states.<sup>24</sup> This dynamic is integral to much French philosophical thought around meaning and language. Maurice Blanchot writes of the delicate flow of conversation, questioning, and response, where there is never immobility or stability: "There is language because there is nothing in 'common' between those who express themselves: a separation that is presupposed—not surmounted, but confirmed—in all true speech" (1993, 55). For Blanchot, speech or expression is always plural, or multiple, and conversations between people are infinite, never offering the satisfaction of closure. One of his major works is entitled *L'entretien infini*; this has been translated as *The Infinite Conversation*, but, given the polyvalence of the French words, it could equally be read as "the infinite exchange" or "the incomplete exchange." It could even be translated as "the incomplete holding-between" (*entre-tien*), which seems entirely too awkward, but resonates strangely with the experience of movement dialogue through low-bandwidth telematics, as will be elaborated.

These interpretations, complemented by Crary's emphasis on the "dynamic, kinetic, and rhythmic modalities of experience and form" that are inherent to vision (2000, 282), bear a particular relevance to perceptual dialogue across iVisit where the visual and kinetic offerings are always partial, always in the process of updating as the packets of information are bounced through the Internet and subject to delays and randomized reconfiguration. The sharing of movement improvisation across Internet videoconferencing platforms is an excellent example of vulnerable human communication, and of modes of visual and kinaesthetic perception that occur within a constructed field of attention: it is about the verb-space of performance (*becoming* rather than *being*, embodied flow rather than in a steady state), and it is rife with disruption and discontinuity. As Blanchot says, it is about offering the possible and responding to the impossible, the "two centers of gravity of all language" (1993, 65).

Telematic movement improvisation is also about the act of listening, another perceptual mode that is not confined to the ears. The moment of suspending our active flow of outwardly directed information, whether this is verbal, physical, or intentional, can feel like a disruption, but it can also be the pause that lets what is being received sink in or permeate the surface of our skin and



consciousness. Intimate to the act of listening are the contiguous decisions to *filter out* and to *let in* various components of any experience. Intention, attention, listening, and concentration are not innate capacities, but are techniques informed by cultural practices and social conventions. Crary refers to these as "deeply historical," and indicates that productive, creative, pedagogical and even routine tasks necessitate that we "exclude from consciousness much of our immediate environment." The result is a "disengagement from a broader field of attraction, in order to focus on a reduced number of stimuli" (Crary 2000, 1). The attentive norms and practices that so intrigue Crary are part of an attentive field consisting in discursive objects, material practices, and representational artifacts (ibid., 7). My argument emphasizes the fundamental embodiment of attention, and places within the attentive field, in addition to the above, bodies, imaginations, and perceptual and physical techniques of all sorts; movement practices can include rooting through the feet, regulation of kinetic bodily patterns or breath, or simply choosing to close one's eyes. Selective disengagement from one's environment was evident in the pedagogic experiment with the iVisit platform and, in fact, was the only way the process could function at all. The iVisit interface generates a tremendous amount of visual noise when run on the average PC or Mac. It displays without discrimination the chat window, the guest directory, the iVisit directory, video windows with chunky borders, standard dropdown menus, and any other files or paraphernalia that clutter an individual's desktop. If anything, it has the feel of a train station in a major city rather than an intimate forum for exchange; and, if your room or folder is not secured, strangers can indeed show up unannounced, and naked.<sup>25</sup>

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Crary's argument is based on a wariness of the social, political, and economic forces that shape our collective attention fields, and that create thresholds above and below which attention is deemed to be dysfunctional. The selective disengagement that I discovered through our telematic improvisation emerged through our physical methodology and was essential to achieve a sense of coherence and connection across the kinetic offerings. The improvised exchange was perceived with only the salient visual and kinaesthetic information present. Over time and with an intensification of focus it seemed as if these simple 2-D visuals protruded into the physical space as if they were holograms. By reading movement information we stretched our perception until it seemed to provide information on the reverse sides of the images; it was as if we could sense the volume and surfaces of the bodies that were not directly seen by the cameras and transmitted by iVisit. Merleau-Ponty's reflections on our ability to construct meaning from what we do not see directly are uncannily appropriate: "If the hidden face of the cube radiates forth somewhere as well as does the face I have under my eyes, and coexists with it, ... this cohesion, this visibility by principle, prevails over every momentary discordance" (1968, 140).

Acknowledging Crary's political point that aesthetic perception is inseparable from the institutional constructions of a productive and manageable subjectivity, it is clear that our field of attention, with its selective disengagement, was shaped by the software and hardware we used. Therefore, in a very real sense, we were controlled by economic forces (we used the software we could afford on very limited budgets or none at all), but we also made kinaesthetic choices that emerged from the flow of movement given our constraints. Most dancers who use computers for choreography are very aware of how the computer's interface design and functionality have been conditioned by corporate usage with the objectives of standardizing and maximizing productivity while keeping to a minimum both our physical movement and our tendencies to critique the interface or software we might be using. One impact of using basic videoconferencing software for physical creativity is to shatter the passive use of PCs or laptops. When you need the system to respond to a broader range of sensory data, it no longer seems feasible for the main user interface mode to be that of sitting slumped in front of text files displayed on a small screen. Greater flexibility of input and visual display is immediately demanded; even the most inexperienced computer users among the dance students participating in the workshops offered suggestions for how to improve the human-computer interface, based on a gut sense of what was and was not working for them. Thus, acknowledging Crary's argument, our attentive practices, without a doubt, were shaped by broad social and economic forces, but in turn we challenged these confines and generated a wellspring of critique and creative sidestepping of the conventions.

#### IMMERSION THROUGH SELECTIVE DISENGAGEMENT

Selective disengagement from a broader perceptual field can also be construed as a form of hyper-focus, which plays a strong role in telematic, or even simply camera-mediated, dance exchanges. An active tuning out of distracting phenomena has the effect of intensifying the facets of experience that remain within the field of attention. This bracketing of elements of the world is akin to the phenomenological epoché and is a known technique in meditation, where, for example, a shift in consciousness can be achieved through attention to breath, or attention to the ambiguous space or gap between breaths. Again, this points to our ability to access different modes of perception or qualities of embodiment. The gaps between the iVisit windows become very rich while physically improvising. Not just empty spaces between squares on a desktop or pixel update lags, these can become rich negative spaces wherein resides the potential for a wide range of subtle physical and



psychological states that include absence, imagination, dream, fantasy, and desire. This reminds us once again why the term telematics is preferable to telepresence in the context of performance, for we never simply dwell in a state of presence. Crary locates the state of reverie at one end of the spectrum of attention, and he integrates a beautiful quote from Paul Valéry into his discussion of attentive perception: "The result is an infinite complexity. To regain control of ourselves in the midst of the moving bodies, the circulation of their contours, the jumble of knots, the paths, the falls, the whirlpools, the confusion of velocities, we must have recourse to our grand capacity for forgetting" (Valéry, cited in Crary 2000, 299). Forgetting can be seen to be both a form of selective disengagement and a suspension of personal movement habits and conventions; as such, a form of amnesia is as vital to a sense of immersion in the experience of kinaesthetic exchange as it is to performing a phenomenology of lived experience.

The experience of immersion is related to the claim that telepresence is a potentiality rather than an actuality. Immersion in a telepresence experiment is less about being at the center of a seamless, realistic digital world than it is about modes of perception within a carefully constructed attentive field. The technical approach to achieving full or immersive telepresence is to provide better and better simulations of the world. "Scientists agree," writes Hubert Dreyfus in his critique of telepresence, that "full telepresence requires a transparent display system, high resolution image and wide field of view, a multiplicity of feedback channels (visual as well as aural and tactile information, and even environmental data such as moisture level and air temperature), and a consistency of information between these" (2001, 57). Yet immersion viewed from a human standpoint is achieved once our physiological, creative, intuitive, intellectual, and imaginative functions are engaged and transcend basic disruptions and distractions. This sort of immersion is not the escape offered by cinema or by the CAVE environment for 3-D computer graphics, but is a multifaceted and active human experience of connection and communication that involves both internal and external dimensions. It is useful to juxtapose the lure of immersive environments in the worlds of media art and graphics, characterized by a fascination for ever higher resolution, displays that extend beyond the full perceptual field, and faster, crisper haptic navigation, with the paradigm shift that Crary sketches in *Techniques of the Observer* (1996). He distinguishes two models of perception. Prior to the beginning of the nineteenth century, models of vision were "predicated on the self-presence of the world to an observer and on the instantaneity and atemporal nature of perception." Coincident with new technologies for display, projection, attraction, and recording, plus new forms of spectacle in the nineteenth century, the older model was replaced with a more accurate assessment of human



perception that "cannot be thought of in terms of immediacy, presence, and punctuality" (Crary 2000, 4). This second model is based on emerging techniques of attention and shifting psychological and physical temporalities. His examples are still mainly from the visual medium of painting, but the shift lends itself to an understanding of perception that is not merely visual. It seems clear that much of our evaluation of the immersive quality of computer-mediated experience continues to be structured according to the older perceptual model for which coherent representation of self, instantaneity, and atemporality are the criteria of success. As will be described, the experience of guiding movement improvisation through the iVisit platform across two continents can best be described according to the second model. It occurs in a field of attention that is simultaneously a simulation of presence and an acknowledgment of its impossibility.

146 Reframing rather than dismissing Paul Rae's challenge raised at the beginning of this section concerning the potentiality or actuality of the experience of telepresence, it is worth questioning whether the iVisit platform can provide sustained, relevant, and coherent movement exchanges. Rephrasing the question in Crary's terms, we can ask whether a meaningful field of attention can be generated when iVisit is used in conjunction with specific physical improvisation techniques. *Sustained* refers to achieving a depth and quality of movement that is more than the physical equivalent of a "one-liner"; *relevant* is an echo of Deleuze's evocative assertion that what matters is not truth but relevance to the world and times in which we live (1995, 126); and *coherence* implies that there is basis for a meaningful movement exchange that endures through several cycles of gestural offerings and receptions, leading us to a different place from where we started. Pedagogical strategies intended to provide the conditions for the possibility for such movement exchanges are offered first, followed by results from actual exchanges.

#### PEDAGOGICAL STRATEGIES FOR DEALING WITH ETHERIC BEDLAM

The Extended Body course was unique in its design from most online learning environments for several reasons: it placed a priority on real-time connectivity through webcams and videoconferencing; it used both synchronous and asynchronous forums for discussion; synchronous sessions were constructed around the integration of seminar-style text discussion with physical movement exchanges and guided workshops; and it resulted in an educational bundle of software for online teaching of theater and dance called the SMARTshell. The Extended Body, and the subsequent

improvisation workshops designed specifically for working with dance and theater students at Warwick and De Montfort Universities, demonstrate that the iVisit platform, and the wider package that makes up the SMARTshell, can indeed be used to reach groups of students, performers, and artists who may have felt disenfranchised by other text-based online learning software packages.

In order to create an online forum where complex ideas can be presented and commented upon in a coherent manner, certain procedures for effective synchronous discussion were promoted. These procedures were particularly important to avoid chaos and confusion during the synchronous chat seminars. The moderators for any given week of the Extended Body course were responsible for giving a short presentation at the start of the session. They filtered their ideas through the chat window in iVisit, a few phrases at a time, respecting the time required to read and assimilate the content. This was an online version of a lecture and ranged from twenty to thirty minutes in length. These presentations had a specific rhythm, focus, and temporality. Subsequently, each participant was given a place in a queue and was invited to pose a question or make a comment. A comment could be deciding not to comment at that time. Maintaining control over any synchronous chat forum is in the interest of preserving the coherence, clarity, and depth of the material.<sup>26</sup> In reality, the structure was loosened somewhat. It became clear that part of the appeal of synchronous chat was the excitement at being together, and it proved to be very fertile ground for the intersection and generation of ideas. A balance needed to be achieved between letting the ideas flow and, with them, the social dynamic of a vibrant discussion, and developing the ideas so that valuable ones were not lost. "Etheric bedlam" is a term used to characterize the radio industry in the 1920s, and a distinct digital version of this was always present in the seminar chat window during these workshops (Peters 1994, 118). The task of moderation was challenging, not just for orchestrating ideas, but also out of sensitivity to the importance of the flow and dynamic of human exchange. The risk of over-moderating and stifling new ideas was just as great as that of under-moderation, resulting in lost threads of potentially interesting discussion. Several practical points can be added. The ideal number of participants was between six and ten, given the capabilities of the iVisit platform at the time and the use of the small windows for visual connection. Greater numbers were feasible but required pairing up at computers in front of cameras, with the result that it became more difficult to ensure that each participant could contribute with ease. iVisit provides an audio exchange function, but this was not effective with greater than three participants (due to signal dropout); further, the audio component detracted from the richness of the kinaesthetic, visual, and textual exchanges.<sup>27</sup>

While we originally thought that discussion of a more free-flowing and broad-reaching nature would occur through the asynchronous discussion board for the Extended Body course, it became clear that the fertile "flow" zone was the live, real-time chat—what we called the seminar. This was where participants made the strongest links between the material and their lives, and where they connected with others. The discussion board was a valuable place to expand on ideas and for the required and necessary introduction of conceptual depth to the proceedings including citations and links across sources and Web resources. The board also acted as an archive. An ideal archive is one where images and video can be posted along with text, but our resources did not permit this for our prototype. As an additional layer of exchange, participants were encouraged to arrange iVisit links with each other on their own time for either discussion or physical improvisation (particularly of interest to the dancers and choreographers for supporting the rehearsal process). An offshoot of this process was the formation of geographically disparate collaborative teams.

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The related workshops with Warwick and De Montfort universities were more condensed in terms of time, content, and moderation than the Extended Body course. I was the only moderator, and I joined the U.K. students in the iVisit forum from Canada. The goal was for students to engage in Internet-facilitated research, discussion, and improvisation as a catalyst for reconsidering their corporeality, improvised performance, subjectivity, and engagement with the audience. The resulting level of theoretical engagement was high (particularly for the master's-level students), and for the final sessions students created small choreographies to present to the group through iVisit, demonstrating an ability to understand and creatively work with the connected technologies.

Physical improvisation strategies were designed to converge with discussion procedures. Participants were requested to configure their environment so that adequate physical space was available for them to do basic movement while captured by the webcam or video camera. This could be their home, office, or dance studio. If one studio space was used for the entire group, barriers in the form of movable walls or curtains were constructed so that the individual members of the group could not see each other across the space, instead using as their primary mode of interaction the cameras and the visual representation offered by iVisit on their computers. A series of physical improvisations, each approximately twenty minutes in length, was followed by chat discussions of approximately ten minutes. This process of movement improvisation—discursive reflection—movement improvisation—discursive reflection is an iterative creative cycle that I use for all of the technologically mediated performances and installations I have designed. Movement is profoundly



conceptual, and periodic translations into verbal/written discourse are excellent for bridging the various languages involved in the creative process. This phenomenological methodology is equally effective as a solo choreographic process and an educational strategy.

For these workshops we used the iVisit chat window as a channel for our discursive reflection. This had both advantages and disadvantages. Using the chat window was slow, and of course the keyboard felt cumbersome immediately following dance improvisation, but some of its shortcomings became quite valuable. The real-time chat window acted as a zone of convergence across three registers of languages—physical, spoken (or *parole* in French) and written (or *langue*). It funneled the staccato, edgy, unpredictable flow of ideas as they arose in verbal discussion into a tentative but still highly marginal written medium. The marginal, or liminal, nature of the chat window, between parochial informality and formally structured ideas, yielded a censor-free quality to the discourse. As indicated earlier, maintaining coherence to the flow of ideas in chat takes some skill on the part of the moderator, but with gentle guidance the discussion hovered on the edge of chaos in a region where new ideas bounced off one another. This became, surprisingly, a very creative space. It was also highly dyslexic, a phenomenon to be addressed later. Excitement, deliberation, or confusion were conveyed very clearly through the chat offerings. The discussion was dynamic, and mostly occurred extremely quickly, to the extent that it was hard to keep up—fingers being slower than spoken words and certainly slower than thought. Further, the contributions to the chat window exhibited traces of the previous physical improvisation: it was possible to sense the differing temporalities within the bodies of the participants in the rhythms of their writing, the development of their trains of thought, and the frequency of their interventions. Like a transposed form of synesthesia, bodily movement was palpable through this rudimentary textual/visual forum.

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The first obvious hurdle for guiding movement improvisation using any videoconferencing system is to overcome the dominance of vision, by which I mean a narrow construal of vision as occurring solely through a direct and sustained connection between the eyes and the object of reference—in this case, the iVisit windows with self and others in them were the objects of reference. In short, it is hard to let your body flow through space if you are, at the same time, keeping your eyes glued to the windows on the desktop of your computer. Habits of seeing affect us profoundly when we use teleconferencing environments for movement, and initially the reliance on sightlines limits the movement vocabulary, and shortcircuits both kinaesthesia and synesthesia. One of the peculiar first impulses when using this setup is to be overly transfixed with one's own window—not out of

ego or narcissism, but almost the opposite: so transformed can one's own video feed be that one's gaze is drawn to it in confrontation with the other within what one expects to be the self. Movement seems to occur at first in a very frontal direction with the face and eyes hardly shifting so that sightlines can be maintained. Once again, it is valuable to draw Crary into the discussion. He asserts that the "scanning of our active eye movements, either voluntary or involuntary, is generated by expectations already established by habitual processing of known cues within a given environment" (Crary 2000, 298). The known cues that dominate this environment are those of frontally addressing, with a sustained gaze, our computer screens and televisions. One of the first stages of learning and creative adaptation to the iVisit platform as a movement environment is to dislodge, or sever, the visual connection periodically, but to sustain the kinaesthetic quality of the movement flow. This amounts to interrupting habitual eye movements. Simple strategies such as periodically rearranging the windows on the desktop are effective, as is placing the emphasis on moving rather than seeing. Embodied metaphors such as "eyes in the back of your head" are always effective for developing an embodied sense of technologies. These strategies help create a space where there is permission to diverge from sustained visual contact, even if this means that something may be missed or not immediately seen and reacted to; they also act to affirm the gaps, and allow for the dialogue between the self and the other to flow without sacrificing one's personal movement qualities in physical space to some technology-driven, and unquestioned, set of behavioral imperatives. Finally, as a guide, it is effective to gently remind participants that although *telepresence* is highly visually dependent, *telematics* provides the space for the rest of the senses, within a kinaesthetic framework. There is no clear recipe for how the rest of the senses will participate, but there are as many possibilities as there are experimenters.<sup>28</sup>

Earlier in this section the question of whether telematics was an actuality or a potentiality was reframed into whether sustained, relevant, and coherent movement exchanges occurred. The SMARTshell plus the pedagogic strategies we developed were able to go some distance toward these goals. It will always be more of a provocative movement platform than a primary environment in which to develop as a performer, and it will never replace the nonmediated hours in a studio. The provocation occurs across movement and thought.

## FIELD (OF ATTENTION) WORK: EXAMPLES FROM LIVE TELEMATIC EXCHANGES

What is striking about embodied telematic experiments is the ease with which potentially dense or difficult concepts from philosophy or other disciplines become intuitive, understood on a physical level. If the body is a basis of knowledge, then shifting the conditions of physical experience while maintaining a line of genuine questioning can result in clarification of otherwise abstract and ungraspable concepts. It is almost as if we become outsiders to our own physical experience, entering into a hyperreflective loop where we observe ourselves in the acts of moving and perceiving, and all previous assumptions are called into question. Our physical work with computers, basic patterns of sensing, meaning-making, and human connectivity are thrown into relief and can be identified, reevaluated, and, if necessary, transformed. New approaches become possible to physicality, materiality, and the levels of kinaesthetic knowledge accessible to us on a regular basis.

One of the Extended Body workshops I facilitated between Canada and England became an extraordinary mini-laboratory for choreography and ideas. As an example of transverse processes, the students who had never before reflected in any depth on the technologically mediated dancing body yielded quite extraordinary patterns of thought and movement, allowing me to facilitate discussion topics that could not be broached through conventional classroom methods with the same internal logic and flow, and that, I contend, would not have occurred in the same way even two years prior to the event. The ease with which the convergence of questions from arts, technologies, cognitive sciences, and sciences such as physics, biology, and kinesiology arose is an indication of our current intellectual climate of cross-semination. The fertile and contentious interface between humans and computers became a focal point for this convergence.

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The following segments of text chat are excerpted from online seminar discussion with the De Montfort students that accompanied the physical improvisation. In the chat transcripts, I am "soozXB," while "Sarah," "marie," and "Tapster" are students. The discussion is entirely unedited, with spelling mistakes and typographical errors faithfully reproduced from the real-time chat; where meaning might be compromised I inserted clarifications in brackets. I am grateful for the students' permission to include portions of our conversation, and for being witness to such inspiring performative thinking.<sup>29</sup>



Segment 1: *On Matter and Energy*,

- SOOZXB: do you know Einstein's discovery that matter is really energy?
- MARIE: yep
- SOOZXB: sometimes i think that when we work through technologies our matter is translated into different levels of enerty [energy]
- TAPSTER: vaguely
- SARAH: vaguely too!!
- SOOZXB: and we can think that light and visuals and electronics are energy
- MARIE: perhaps it isn't a different level. only that we become more aware of it
- TAPSTER: it is heightened
- SOOZXB: yes, this is just another way that i let myself be open to receiving physical information through various technologies
- TAPSTER: sorry it is heightened awarenss of energy's that we don't always use ot [or] are concerned with
- 152 SARAH: hmmm....
- MARIE: perhaps it is because your experience as a whole is almost fragmented

More than ten years ago, when artists working in dance, theater, and performance art began to suggest that digital technologies produced a different sort of materiality, rather than a negation of materiality, we were met with degrees of incomprehension. This was not because the notion itself was so complex, but because few readers had an experience to support the idea of reworking materiality. Yet in the preceding chat exchange this idea was assimilated without contention or confusion: the anchoring of this discussion in the midst of physical experimentation across a telematic link facilitated understanding. It was less a leap of imagination and more a direct interpretation of immediate physical experience. Or perhaps our cultural orientation to technologies had already shifted from the more rigidly dualistic one of "meat versus digital information" toward an increased sense of the sticky interface between bodies and technologies. Either case can be seen as an example of the closeness of the ideas to the bodily experience.

The shift from presence to telepresence in the context of education has been critiqued by Hubert Dreyfus in his book *On the Internet*. His ideas provide useful counterpoints to the discussion of the learning experience with the students. The question he asks seems to be simple: "What would be gained and what, if anything, would be lost if we were to take leave of our situated bodies in

exchange for ubiquitous telepresence in cyberspace?" (Dreyfus 2001, 52). Yet there are unquestioned assumptions regarding embodiment behind this question, including the assumption that engaging with "teletechnologies" implies a disembodied state; that telepresence requires a ubiquitous technological environment; and, most contentious of all, that face-to-face learning is necessarily a richly embodied experience. There is no guarantee that students sitting in a lecture room will be more present, engaged, and alert than those learning through a telematic platform. Students may be co-located but distant from the learning process, and anyone who has ever been a student or a teacher will know this. Fundamentally, embodiment is not a given state but a process, and there are techniques for embodiment that we employ every day, steadily fine-tuning our level of presence. On a banal level, the choice to drink a cup of coffee, to have lunch now or in an hour, or to stretch one's legs are all techniques regularly employed to maintain levels of conscious bodily presence. More sophisticated embodiment techniques such as meditation, martial arts, or juggling result in more exaggerated or specified states of bodily awareness and presence. All reside on a spectrum, and all involve a hyperreflective awareness of bodily state. The preceding simple exchange eliciting the suggestion that we could view our bodies as energy rather than matter initiated a hyper-reflective dynamic, which, when planted into the basic telematic environment of iVisit, yielded a sense on the part of Tapster of there being "energies that we don't always use or are concerned with" and marie's assessment that "experience as a whole is almost fragmented."

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Dreyfus is resolutely unconvinced of the effectiveness of telepresence as a learning strategy for standard university curriculum or for specific training such as that of medical interns, and he grounds his argument in valid ethical concerns over what is lost when human beings relate to each other by what he refers to as "teletechnologies." For the most part he refers to importing classical approaches to university education (the lecture, the seminar with large numbers of students, the demonstration of expertise by a professional to interns) into telepresence environments. Further, the style and manner that he considers echoes the televisual approach to broadcasting images and sound into a remote space so that others may see and hear the information. An inherent distinction between active teacher and passive or receptive student underpins this model in a way that is not relevant to the shared group improvisation and discussion of the Extended Body workshops, so in some respects the ground for comparison with Dreyfus's model is scant. Another obvious difference is that the number of participants in the Extended Body experiments ranged from six to twenty—very small groups compared to the population of most university lectures. Despite the differences, some of Dreyfus's broad assertions regarding the nature of telepresence have to be

critiqued in the light of embodied and artistic experiments with telepresence in education, lest our entire cultural usage of a range of technologies become colored by certain limited experiments with them. For example, the following statements by Dreyfus reflect more upon his own bodily techniques and field of attention than they do on the inherent limitations of the technologies:

**What is lost, then, in telepresence is the possibility of my controlling my body's movement so as to get a better grip on the world.**

**What is also lost, even in interactive video, is a sense of the context. In teaching, the context is the mood in the room. In general, mood governs how people make sense of what they are experiencing. Our body is what enables us to be attuned to the mood. (2001, 60)**

As with the introduction of technologies into most parts of life, it is not loss as such but a transformation that occurs. With telepresence technologies, there is not a loss of bodily movement but a need to question and shift physical habits, not a loss of context but an amalgamation of contexts into something different, not a loss of mood but a mood that requires different perceptual techniques for its reception. As Blom and Chaplin, in their book on dance improvisation, so aptly suggest, "The body knows many things and can learn many more as various knowledge systems work together"; our technologies become just one of the various knowledge systems working in concert and our bodies have the ability to learn to make them work (1988, 18).

#### Segment 2: *On Embodiment and Hyper-reflection*

- SOOZXB: good distinctions—is the body (your body other bodies) different in camera space from in virtual space?
- SOOZXB: are we dealing with two types of embodiment?
- MARIE: that's kind of necessary, otherwise you would need to try and achieve everything. lol
- TAPSTER: I think bodies are limited but as you say it can be used creatively,
- TAPSTER: I find it hard to focus my movements I like to see clarity
- SOOZXB: every sort of visual connection has its own poetics and kinetics—in this case we see a lot of concentration, hesitancy, frames dropping out mean that we need to interpolate meaning ... and yes a lack of clarity



TAPSTER: I can move freely in virtual space but in order for it to fit and [be] recognisable [if it's meant to be recognised] in the cannera [sic] and in the frames I have to slow down and concentrate my focus on whats happening in the camera space!

SOOZXB: does it feel like a split concentration?

TAPSTER: Yes!

The insights to be revealed through this section of the chat seminar echo suggestions by Deleuze and others that movement is composite or multiple. In *Bergsonism* Deleuze writes, "Movement as physical experience is itself a composite: on the one hand, the space traversed by the moving object, which forms an indefinitely divisible numerical multiplicity . . . and pure movement, which is *alteration*, a virtual qualitative multiplicity" (1991, 47). Students begin to get the sense, through their movement and their ideas, of a qualitative distinction between virtual space, physical space, and camera space that is an intermediate space acting as a bridge between virtuality and physicality. A dynamic hyper-reflexivity is evident through their ability to see themselves from the position of virtual space and then to apply it, filtering it back, to their movement in physical space. This insertion of the view from virtual space functions on several levels: imaginary, conceptual, and pragmatically as that which is mediated through the camera.

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The desire for clarity expressed by Tapster stands out as a desire for a physical and visual logic, prior to a suspension of that form of logic in the interest of finding another one. This sensual logic affects our perceptual access both to our self and to the other, because a large part of presence in this telematic context is mediated through one's own visual feed alongside the others. Telematic experiments reveal the impossibility of direct, sustained perceptual contact with either others or yourself, and, as such, demonstrate that a "full grasp of a self-identical reality" is not possible, and that "human perception, conditioned by physical and psychological temporalities and processes, provide[s] at most a provisional, shifting approximation of its objects" (Crary 2000, 4). These experiments are also a clear example of the gap between utterance and reception at the core of communication theory (Peters 1994, 118), inasmuch as what I think I am offering in terms of movement vocabulary and rhythm is not what actually materializes through the Internet, and what materializes for me on my computer is not the same as what appears on others' displays.

The use of cameras for real-time connections requires the development of a strategy for maintaining eye contact, and with that, a strategy for establishing a sense of kinaesthetic body contact

(this is more subtle). Dreyfus cites David Blair's insightful reflection on using CU-SeeMe, the precursor platform to iVisit, in a teaching context. Blair's reflections are sufficiently embodied to have identified the discrepancy of lines of vision.

**My experience with the CU-CMe [sic] ("see-you-see-me") technology on computers is that you cannot make eye contact over a visual channel, no matter how good the transmission is. To look into another person's eyes I would have to look straight into the camera but then I would not be able to see the eyes of the other person since, to do that, I would have to turn from the camera to the student's image on the screen. You can look into the camera or look into the screen, but you can't do both.**

(cited in Dreyfus 2001, 60)

Again, I want to question, tactfully, broad statements of "what cannot be done" with our technologies. Too frequently, an assertion of what is impossible indicates that other possibilities have not been tried, due to either lack of time, lack of resources, or lack of a desire to do things differently.

156 The disjunction of sightlines between camera and displays is definitely odd at first, but can be addressed through working creatively with the position of the cameras, the projection surface, and the bodies in the room. If the camera is in front of you and the projection surface is behind you, of course you will have difficulty both sending and receiving sightlines. Possible solutions reside in addressing the scenography or dramaturgy of the encounter; if it were a performance you would address where to place the audience and the technology. Educational experiences rely tremendously on the performative, and camera-mediated educational encounters doubly so. Thus, the first approach would be to actively reshape and position the components in physical space so that they contribute to the interaction you desire. To borrow terms from the expanding field of HCI (Human Computer Interaction), I am suggesting that we become aware that we are engaged in what can be called interaction design or experience design. The second approach would be to regard the experience as a dynamic physical engagement; in other words, I am suggesting that the experience of using cameras and telepresence can be choreographed. For example, a choreographic strategy would be to shift from looking into the camera to looking at the person's image as displayed and back. This rhythm is characteristic of regular human engagement because it falls into a loop of transmission and reception, like a dialogic loop. The phenomenological reality of playing across the disjunction between the transmission and reception of sightlines is that the thread of connection can be maintained even as the positions shift. A spillover, or wraparound, effect can be achieved. One of the students, Jenni, addresses this phenomena in the next chat segment when she indicates

that after she logs off she still feels in contact with others. She refers to a wider perceptual experience than only vision.

Segment 3: *On Contact Improvisation*

SOOZXB: think of contact: what do we receive from others?  
 SARAH: are we not connected by the fact that we are looking at each other all the time, we reach out for it by asking questions we receive by different responses  
 TAPSTER: wieght [weight] , pressure, the sense of touch can be very sensual  
 SOOZXB: contact is give and take . . . initiation and response  
 SOOZXB: yes, so what can we receive through the cameras?  
 TAPSTER: it has to be imaginary  
 TAPSTER: like in drama class and imrpolvising [improvising] you are moving a heavy sack  
 TAPSTER: You have to miagine [imagine] the weight from what you know.  
 SOOZXB: yes  
 JENNI: not necessarily—after i log off i feel as though still in contact with others  
 SOOZXB: nice observation  
 SOOZXB: again, have we entered the area of imagination or even dream state?  
 TAPSTER: emotional and spiritual contact but what about actual physical contact?  
 SOOZXB: it is true that we cannot feel weight but how can we sense it  
 SOOZXB: through visuals and kinetics?  
 TAPSTER: visually, by seeing what the others are doing  
 SOOZXB: through position of camera and exposure of the shot?  
 TAPSTER: we can interpret the passing and connecting of wiehg [weight]  
 SOOZXB: good—interpret how? just with our eyes?  
 SARAH: through our own experiences, outside of this place.  
 TAPSTER: with common knowledge with relating actions to past experience  
 SOOZXB: yes and I would add something else  
 SARAH: and the power to reason out consequence  
 SOOZXB: when you work a lot with someone and build a sense of trust and connection  
 MARIE: it's a kinetic thing. we are trying to move with other people although those people are not right next to us



Contact improvisation is a form of improvised movement exchange that integrates the sharing of weight and momentum arising from contact between bodies into emerging movement patterns. Physical connections are made, often resulting in lifts, falls, and unexpected shifts in dynamic and kinaesthetic quality. An approach to media art espoused by increasing numbers of artists (with and without dance or performance histories) begins with a primacy of touch and shared physicality, and creates a mediation across images, self, others, sound, and responsive objects or environments. Touch can be tangible when mapped across media. In the same vein, the preceding chat exchange emulates physical interaction and has a sort of physicality to it. Note the fluidity of dialogue as it occurs through the iVisit chat window, the sense that connections are being made for the first time, and the real-time dyslexia evident in misspelled words, plus overlapping and backtracking discussion. This dyslexia of spelling and sequencing is a result of the proximity between this chat and the movement immediately prior to it, both a product of making a shift to the awkward interface of the keyboard, but also an example of the threshold between thinking through the body and thinking through language. The membrane between the linear logic of written language and the spatio-kin-

158 aesthetic logic of the body is porous, and, when not censored, can result in intertwined and overlapped ideas, intertwined and overlapped letters of words, intertwined and overlapped physical and discursive spaces. The chat also has its own rhythm, a shifting pattern to the giving and receiving of thought. What is not revealed through the presentation of this chat dialogue was the rapidity with which the ideas were generated and fed into the windows. This was a very fast exchange.

As ever, Crary's insight is valuable when mapped into a telematic context, which can be seen as an example of a forum for, to use his term, counter forms of attention: "Counter forms of attention are neither exclusively nor essentially visual but rather constituted as other temporalities and cognitive states, such as those in trance or reverie" (2000, 3). His assertion that new "forms, affects and intensities" are possible when attention and perception are not reduced simply to vision, is relevant to technologically mediated performance experiments, but also echoes, in a fundamental way, a dancer's knowledge of how her body transforms through application of physical and perceptual techniques of the profession. It is common for a dancer, or indeed a yoga practitioner, to view her body as a simultaneous conjunction of form, affect, and intensity.

The basic claim that the use of technologies in the embodied arts can both reveal and be a site of transformation of our wider cultural practices has embedded within it the need for reversal and reinvention. Instead of evaluating our telematic experiences on the basis of some unquestioned

notion of "normal" presence in human communication, perhaps the experience can be turned on its head: connecting physically through cameras, software, and the Internet can reveal the many layers and textures of our communication and lead us to the realization that *it is all mediated*. Cray makes a similar assertion based on "disruptions, vacancies, and rifts within a perceptual field" based on a consideration of painting, and suggests that "discoveries about the indeterminacy of an attentive perception . . . could be the basis for a reinvention of perceptual experience and of representative practices" (ibid., 9). Deleuze, in turn, offers some surprisingly earnest insight on mediation: "Mediators are fundamental. Creation's all about mediators. Without them nothing happens. . . . Whether they're real or imaginary, animate or inanimate, you have to form your mediators" (1995, 125). Our bodies are mediators, others are mediators, our technologies are mediators.

### *On Gaps*

The following two segments framed a guided movement improvisation that focused on gaps, and they reveal an entwinement between abstract ideas and their concretization within the body facilitated by actual physical improvisation. Concepts become knowledge once they are grounded in bodily experience, or, as Don Ihde (2002) says, the knowledge comes through the interaction.

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- SOOZXB: we have many sorts of gaps in this forum
- SOOZXB: gaps between windows on our desktops
- SOOZXB: gaps in time (lags, disconnects)
- SOOZXB: gaps in geography (national, international)
- SOOZXB: only parts of our bodies are shown . . .
- MARIE: yes. but the only gap we notice is when somebody disconnects. perhaps because this is the only gaps we cannot communicate across
- SOOZXB: IN general, i believe we read movement by not just what we see but what is implied—the imaginary. a good choreography is very suggestive and knows just how much to show and when to not show something
- TAPSTER: I think the gaps in the bodies works great though it's so surreal
- SOOZXB: Marie—try looking at the forum differently, so that you are sensitive to other gaps—not just the disconnect
- SOOZXB: often we just need to train ourselves to sense and to see differently

TAPSTER: And not like going to the theatre and seeing the whole dancers body but fragmented things and people!

SARAH: i find these gaps interesting because they add a fragmentation to a performance that is not possible during live shows for example, each person gets a different picture.

TAPSTER: exactly

SOOZXB: yes, and i'm sure that what we are seeing on each of our computer screens at each moment is slightly different from each other...

SOOZXB: like a personal fragmentation

MARIE: yet in this forum we all get a different picrure as well

160 The idea of gaps obviously threw some of the students off at first. While being receptive to imaginary space on a poetic level, at first the gaps that entered into their frame of reference were those when someone disconnected and could no longer communicate, or gaps were deemed to be "surreal." (Although at a different point, Sarah claimed that "losing the connection is almost a performance in itself," revealing a reasonably sophisticated understanding of gaps and performativity.) Immediately following the preceding dialogue we performed yet another improvisation, where the students paid explicit attention to the gaps and inherent rhythms of the connection. Instead of working against the stickiness of the interface, they integrated it into their exploration. Greater depth and physical awareness is revealed in the brief exchange that follows.

MARIE: that was great!!

SOOZXB: did it feel different?

TAPSTER: in a way i find it hard to understand epoples [people's] processes

MARIE: movement was more continuous.

SARAH: yes, trying to keep receiving concept in mind but frames disjointed so sometimes difficult!!

TAPSTER: there is such a need to work slowly in order to follow when working together

SARAH: yes, slow is the key!!!

MARIE: still felt like contact omprov [improv] to me

TAPSTER: or in order to recieve [receive] others ideas

Quickly the students began to grasp that they not only received the *form* of the other through the telematic interface, but also had a sense of receiving their *ideas* and hints of their processes; and



the sense of contact improvisation, an extremely physical technique for dance exchange, became the new experiential point of reference. These observations were the result of a very simple phenomenological process of using technologies while suspending habits of thought and perception, and they indicate that when Dreyfus asserts that "something about the distance still undermines our sense of direct presence" he does not speak for all telematic experiences (2001, 55). Revisiting his concern that through telepresence one loses one's body and one's grip on the world, I would counter that simply because my body exists differently across visual and kinaesthetic mappings does not mean that I have lost my grip; it just means that I need to spend time assessing the new "grips" that are offered. This amounts to embarking upon a learning curve for techniques of embodiment associated with our technologies, rather than simply learning how to use our technologies. Developing techniques of embodiment takes time, and a commitment to suspending perceptual, proprioceptive, and kinaesthetic habits. I may not enjoy this physicality, but it is physical.

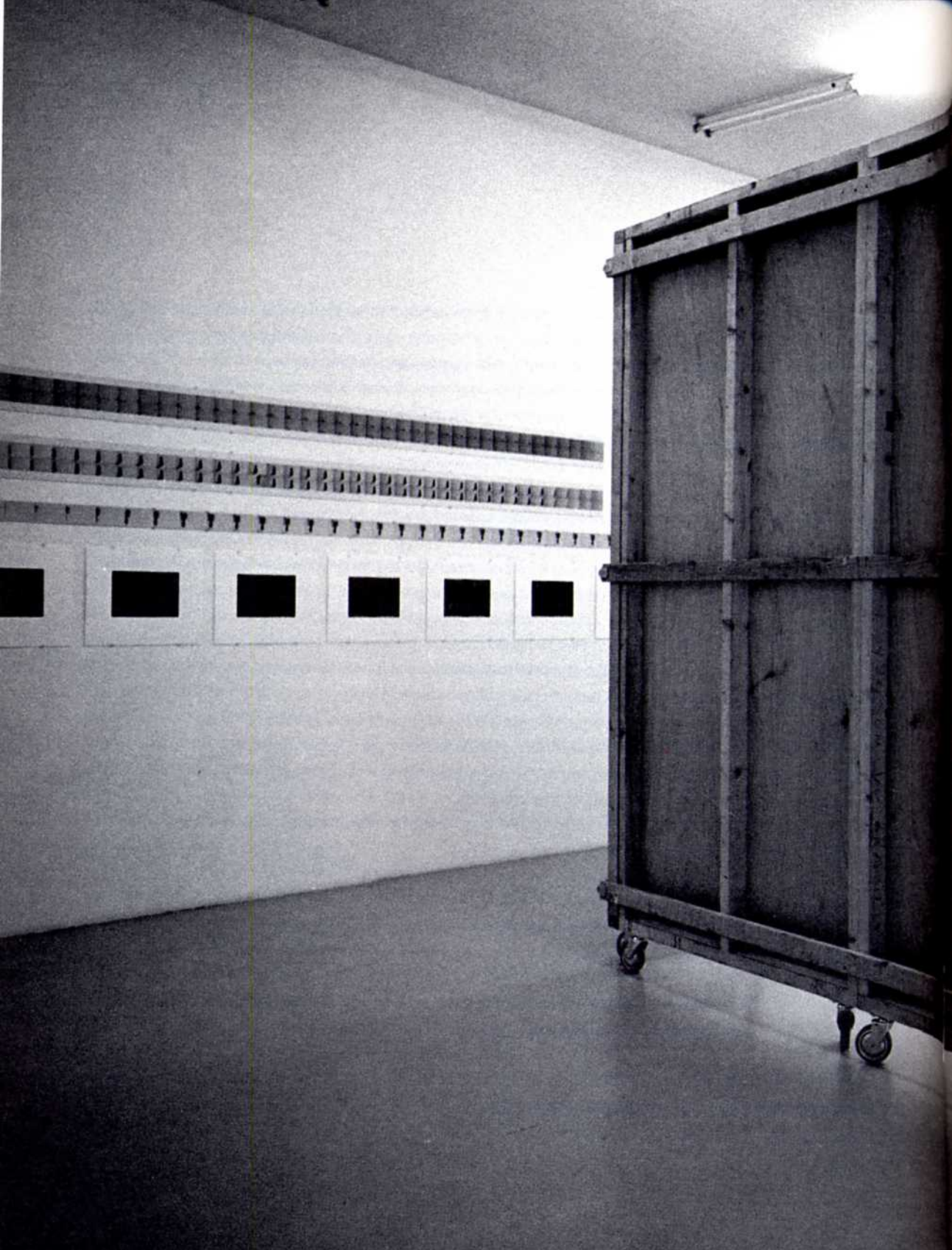
Lest it seem that I am offering a one-dimensional critique of Dreyfus, I do recognize that our views reflect different educational contexts. Despite this, we share a fundamental concern for meaningful embodied exchanges through our telecommunications technologies and agree that intercorporeality cannot be captured by throwing ever more high-end technologies into the mix, such as 3-D graphics, robotics, stereo sound, and so on. He indicates a direction for research and acknowledges potential social and economic constraints: "The challenging case is live, interactive, video distance learning, although this is not the use of the Web that administrators find cost-effective and therefore attractive" (ibid., 58-59). And with this he opens a new spectrum of economic and political issues behind telematic pedagogy.

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I would like to let a student have the last word. Quite unprompted, amid the students' other valuable and relevant insights, marie exhibited within her field of attention an example of synesthesia, a mapping across senses, and an awareness of two simultaneous, overlapping contexts.

MARIE: **find it interesting that while we are all on the same screen and can see similar things, we are also in different environments with different sounds and smells**

And in this unexpected comment, to my delight, she drew the most technologically underrepresented sense into our exchange: the sense of smell.











Interactive computer art, however, can never exist only as software. The work must reach out into the world in some way

Live performance is precisely the element that characterizes the performing arts.  
Does it follow, then, that interactive computer art is by definition a performing art?

—DAVID SALTZ, "The Art of Interaction: Interactivity, Performativity, and Computers"

164 This chapter looks at installation as a modality for expanding and diversifying the ways audiences engage with interactive media. The first project discussed contains no computer technology at all but was made of other nonhuman materials: approximately 900 kilos of wood. The *Plaatsbepaling* (or "positioning") episode of *Room with a View* (conceived by Jeanne van Heeswijk, 1997–2000) was a cross between a performance and a day-long installation that, in the tradition of performance art from the 1960s, can be called a sort of endurance art. It also fits into the emerging trend of computer-mediated performances that fall somewhere between performance and installation called the "performative installation." This genre, along with the subtly different but related one of "participatory installation," are increasingly influential for expanding the narrative and physical scope of the traditional roles for performer and audience; they are also creative zones where theater and performance rub shoulders with experience design. The phenomenology in the first part of this chapter based on the performances of *Plaatsbepaling* addresses the critique that phenomenological method is biased toward space, rather than time, and that it somehow relies upon a mediation of a current experience with an authoritative originary experience. The different temporalities and rhythms of *Plaatsbepaling* are presented in dialogue with architects and architectural theorists such as Greg Lynn, Frederic Jameson, and Charles Jencks. Their ideas are used to mine the phenomena of time while, at the same time, the discussion is grounded in the physical act of pushing the room around to avoid spiraling off into spatio-temporal metaphysics.



The responsive installation *trajets*, considered in the second part of this chapter, is a departure from *Plaatsbepaling* and the other performances in this book because it was not based around the live presence of dancers or performers. It was my first step in the shoes of a media artist. And in fact on opening night I had to calm an urgent physical impulse to warm up my muscles before the visitors entered the space, to say nothing of the free-floating anxiety at the realization that I would leave the gallery and the installation would stay open to the public in my absence. This piece could live without my being in the same room with it, even though my movement traces helped animate it. The decision to experiment with installation as an artistic modality was prompted for two main reasons. The first is that my own practice was at a crossroads due to pain and injury. It hurt to move and even to stand, I was burnt out after the demanding tour of contours (a performance discussed in chapter 4) and my hip and spine were misaligned due to years of work in a poorly designed harness, and, prior to that, years of damaging technique. More significantly, I was unsure what sort of movement vocabulary I wanted to inhabit. Dancers find a home in technique, yet occasionally, without warning, we have to leave it. This resembles being evicted from a familiar place, or deciding to pack up and leave a relationship that is no longer comfortable: a forced departure. I had deconstructed a number of dance techniques and movement vocabularies over the years in



166 order to find a mode of improvisation that was kinaesthetically diverse yet physically articulate. This diversity was required in order to respond to unexpected movement demands that emerged through collaborations with digital artists and architects, but also so that I could integrate unexpected impulses that were generated by ghosts in so many different machines or systems. I had not yet found my new place of *technique* that could accommodate the demands of *techne*, both as an engagement with technologies and in the Heideggerian sense of revealing.<sup>1</sup> The second motivation for building *trajets*, with collaborator Gretchen Schiller, was simply the challenge of preserving the kinaesthetic qualities of moving bodies across a range of different media, and of combining these with the kinaesthetic sensibilities of the visitors to the installation.

Like the *Plaatsbepaling* episode of *Room with a View*, *trajets* falls within the genre of installation animated by performance. While *Plaatsbepaling* can be called a performative installation, *trajets* is a participatory installation largely due to the more active role played by the visitors or audience in the unfolding of the piece. I could and at times did perform *Plaatsbepaling* in the absence of visitors; this was still the same installation but with an entirely different feel: it was a performance for nobody, or a performance for the performer, or for the walls, floor, and echoing, empty space. But without participants *trajets* existed only as a quiet and contained system. In order to leave this idle mode, it needed participation, presence. In this chapter, discussion of *Plaatsbepaling* demonstrates



how a phenomenology of the performing body across nondigital materials can also relate to performance with technologies. This is followed by an extended reflection upon *trajets* out of which emerges the ingredients for a poetics of responsivity. 167

# TIME ON MY HANDS: PERFORMING ALONE WITH A WOODEN ROOM

168 *Room with a View* was a series of collaborative experiments in the 1990s, conceived and hosted by Dutch artist Jeanne van Heeswijk, that occurred through the conceptual and physical structure of a wooden room on wheels. *Plaatsbepaling* was the only episode of *Room with a View* that moved—physically. Its position within the gallery space was continually shifted throughout the course of one day, with a day defined according to the opening hours of a particular gallery and not according to the journeys of the sun and moon.<sup>2</sup> At the Witte de With in Rotterdam (24 February 1996) the day lasted from 11 a.m. to 6 p.m. At the Museum for Modern Art in Arnhem (August 1997) the day lasted from 1 p.m. to 6 p.m. At the Gemeentemuseum in Den Hague (2 May 1998) the day lasted from 10 a.m. to 5 p.m.

*Plaatsbepaling* was devised in 1995, visited three galleries over the course of three years, and now exists through writing, images, and memory. Time and movement have long been associated, and it seems fitting that a text about *Plaatsbepaling* be situated within concerns of temporality, particularly considering that this is the only *Room with a View* installation that is not officially deemed to be closed or completed. Van Heeswijk has decided that it will remain open, with the potential for reenactment in what must hazily be defined as the future. Whether this reenactment does happen or not is immaterial: the deliberate non-closure is a significant temporal choice, as significant as choosing to introduce a large wooden structure on wheels pushed by a dancer into the traditionally static walls of conventional gallery spaces.

So perhaps existential time is itself a breakdown product of an older collective time, and perhaps it also generates its own space, the space it deserves. Perhaps the dilemma of the room as some inescapable final form of space is to be thought in this context, that ultimate existential room that was the stage of Beckett's plays...

That is to suggest that we cannot think beyond the room, and that the room marks some final arrested point of temporality.

This is not necessarily such a terrible thing either... you have reached the limit and mapped out the final boundary, beyond which the mind cannot pass, then in fact, by the very act of becoming conscious of that limit or boundary, you have already gone beyond it in a way, you have already drawn it inside thought and transcended it.

—FREDRIC JAMESON, "Time and the Concept of Modernity"

Van Heeswijk and I devised *Plaatsbepaling* in two studio spaces in Rotterdam. The Room (measuring 3m x 4m x 3m, with wheels, a door, and neither ceiling nor floor) was set up, and I became acquainted with its structural form. We did not begin with any preconceived movement patterns or narratives, beyond a desire to explore the dynamic act of positioning. The entire installation, from devising to performing, was one long dialogue among van Heeswijk, myself, and the Room, under the eyes of a range of visitors. It rapidly became clear that this Room was not a fixed entity. It changed depending upon the humidity in the air and the surface of the floor. On humid days it was almost impossible to move, for slight swellings of the wood of the Room and of the studio floor produced unexpected friction. The huge structure's wheels spun and shifted in and out of alignment, akin to the quirkiest shopping trolley, making it sometimes glide effortlessly and sometimes stop as if frozen in time and space. I climbed up it, around it, over it. I observed it from afar and flattened myself against it, trying to occupy the same space it did. I witnessed how natural or artificial light reflected off it and bounced through it. Then there were sounds to consider. The structure creaked and groaned, of course, since it is made of unfinished wood. It rumbled formidably when it was made to move quickly and seemed to breathe and click phlegmatically when made to travel very, very slowly.

Although narrative was not a priority, each sequence of this precisely choreographed pattern of movements seemed to generate a meaning. Although beauty was not a goal, viewers often



170 credited us with having created a strangely beautiful piece. Theater practitioners assert that one needs only a person (with or without an object) in an empty space for a narrative to be attributed to the situation: even the absence of dramatic intent has dramatic effect. And dancers experimenting at the margins of the dance world know that there is implicit beauty in the pedestrian. *Plaatsbepaling* intended neither political narrative nor formal beauty. Its starting point was simply positions in space. The patterns and speeds in time and space that make up a full day of movement began as mundane explorations of the many ways a body can move with a large structure. These transformed into the personal and political geometries of objects and people in gallery spaces.

Two unexpected qualities emerged from the performances and act as the basis for a discussion of time that sees the room not as "some final arrested point of temporality" (Jameson 1999, 216), but as the vehicle for questioning the temporalities that converge through it.

The first quality: intimacy. I became extraordinarily fond of "the box," as it came to be known. Yet, as with any personal relations, affection was interspersed with frustration, boredom, play, and irritation. A range of human emotions and responses filtered through my tasks and became interpretable by the viewers. The sequence of long, slow, straight pushes was extraordinarily simple but physically difficult. Huge structures do not like to move in straight lines. The strain and mental concentration required to achieve longitudinal and latitudinal traversals of a gallery space were

FIG. 33 above, *Plaatsbepaling*, 1997



extreme. Sweat poured down my body. The exhilaration of managing to spin the Room in a swirl of 360-degree circles was as tangible as a ride at a Fun Fair. The precision-fetishism of adjusting the structure within a centimeter of a desired position became a legitimate parody of the painter needing just one more stroke in order to make a work complete, the writer just one more word—endlessly. And finally, the moment of collapsing onto the Room, of making it move very, very slowly had an explicit physical poetry to it. The sounds of the wood on wood in one ear and the echoes of people in the gallery in the other made a sandwich out of my own rasping breath and pounding heart. My bones and the wood, its creaks and my breaths, moving at a monumentally slow pace: was this a performance, a work of art, or an exploration of human and structural vulnerability? Upon reflection, much of the richness of *Plaatsbepaling* arises through the juxtaposition of highly concrete, but fleeting, physical sensations with conceptual and formal features.

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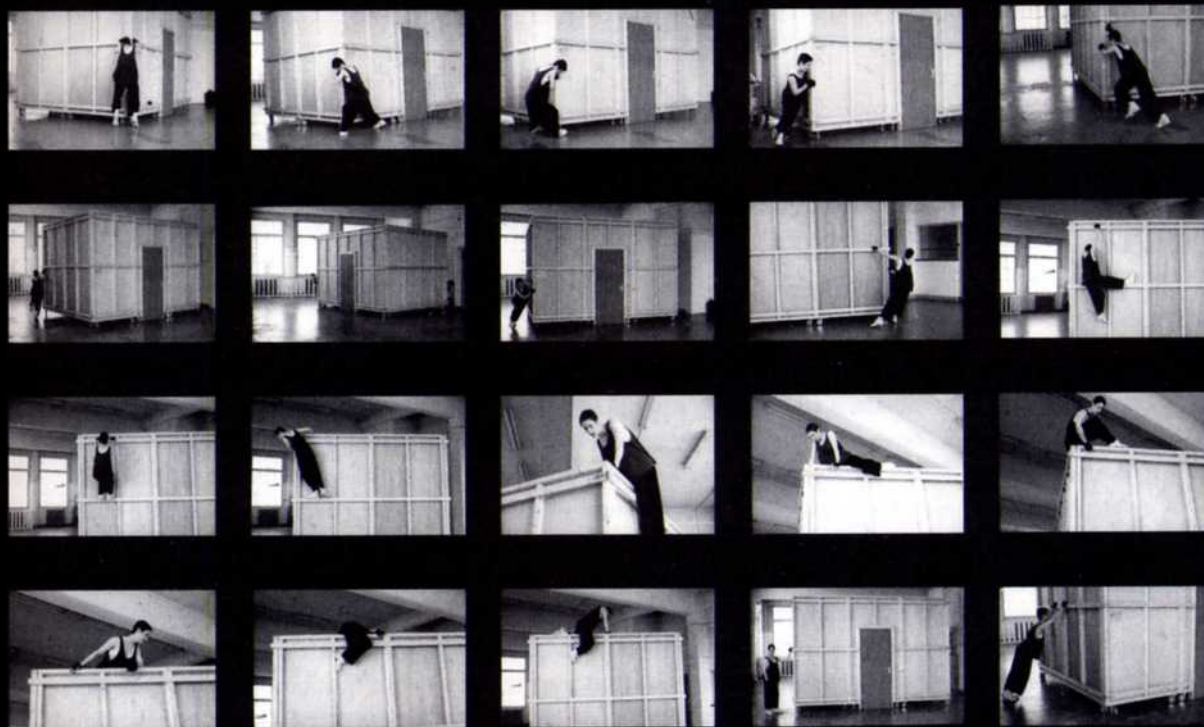
The second quality: an evolving sameness across time. The three installments of *Plaatsbepaling* were striking for being so different, but so much the same. The three locations were quite distinct from one another. The Witte de With gallery is a white cube located in the center of Rotterdam. It is a bastion of contemporary art. On the walls during the visit of *Plaatsbepaling* were photographs by Eadweard Muybridge and Jan Dibbets—themselves exploring movement trapped and released across time through photography. The Room glowed, honey-colored, in the near hospital-like whiteness of the exhibition space. The Museum for Modern Art in Arnhem was altogether warmer and



172 friendlier, but not without edginess. Slightly uneven walls and parquet floors housed an exhibition of paintings by women artists, including powerful images from Marlene Dumas. The Gemeentemuseum in Den Haag was in the midst of renovations when we visited, and an exhibition of work by young Dutch artists had infiltrated the space to coincide with a conference on art and politics. For most of the day *Plaatsbepaling* moved dust, the guards, and a few stray visitors. The crowds came when the conference had its scheduled breaks. The pervading feeling was one of emptiness. *Plaatsbepaling* revealed a sort of same-difference across the locations and the time frames. Despite a lack of rehearsal, in Den Haag the sequences of pushing, climbing, circling, approaching, caressing, and adjusting remained extraordinarily precise. Body memory has a large part to play in the ability to reproduce a choreography by drawing upon reserves other than the celebrated ones of conceptual and visual memory. Body memory combined with the way an object is absorbed into the body's sense of its own extension accounts for how I was able to swing the enormous structure within several centimeters of a painting or a wall and know with certainty that I would not hit it. There were subtle tangible differences, as one would expect, across time, location, and my physical state—for Arnhem's performance I had a bad back, for Den Haag I was exhausted from another performance at midnight the night before. But most striking was a play across an intangible *maturation* that allowed for the recognition that it was the same piece, combined with a *naïve rediscovery* of the forms, patterns, and relations in space that made each performance seem as if it was a new encounter.

FIG. 34 above, *Plaatsbepaling*, 1997





With *Plaatsbepaling*, *Room with a View* has become a site of convergence between two temporalities: a phenomenological temporality of experience and a wider understanding of the sweep of developmental time. The former relies upon the sense-data derived from any given moment to establish an understanding of an event and is prevalent in much discourse on live performance; while the latter allows for form to be a dynamic condition rather than a fixed set of coordinates. Developmental time is a topic of debate in architectural circles and has been described by Greg Lynn as follows: "Organization in biological systems that grow and reproduce over time must be understood in terms of developmental time. Evolution and epigenetic growth conceptualize form as a developing process rather than a frozen or fixed condition." He continues: "The process of developing in time involves an internally constrained organism unfolding in complexity within a contextual field of influences. The effects of this process are the differences that emerge in the organism. These are in principle rhythmic" (Lynn 1999, 269).

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The idea of developmental time can be used to explore the potential limitations of a phenomenological or experiential approach to movement. There have always been objections to phenomenology based upon hasty readings of Heidegger and Merleau-Ponty that attribute them with imposing a universalized male subjectivity as a baseline of experience. This is not the problem I am addressing here, for I have managed to refigure the late writings of Merleau-Ponty into a philosophical approach that allows for the embodied experience of the dancer in earlier writings. The issue to be

FIG. 35 above, *Plaatsbepaling*, 1997

addressed arises from debates across architecture and time and suggests that perhaps the phenomenology of immediate lived experience is still somehow too static, and too exclusively centered on one individual. The exploration of the moment through the senses runs the risk of illuminating only that moment as if it were a curiosity, a cameo, an ultimately disjointed postmodern fragment. Yet the move to avoid fragmentation and extend the relevance of the moment across time then risks positing the experience of the moment into a sort of template or truth. This relates to the critique that phenomenology is biased toward space, rather than time, and that it somehow relies upon a mediation of a current experience with an authoritative originary experience. "To imagine spaces that include the times of disparity or hybridity, freeing our modes of being and their composition from prior narrative and allowing new histories to arise in our histories, requires that one depart from the phenomenological 'grounding' of space" (Rajchman 1999, 157).

While I have never found an experiential approach to performance unable to account for "the new" (as in the "new histories" referred to by Rajchman), I do think there is a danger of newness being conceived as something new followed by something new followed by something new followed by something new, ad infinitum. The result would be a string of new experiences in a linear progression with the newest of the new being elevated in importance (this is the model of our consumer economy, hence the obsession with ever "new and improved" products). Overcoming this aspect of sensual experience requires attention to the subtle difference between progress and process. For years it has been common practice to open an experimental performance work for viewing prior to completion, and to call it a "work in progress." Progress implies that the work is on the path toward closure, or completion at a future date. It would seem that the temporality to be drawn out of experiential time needs to allow for process, understood as an evolving state with no single iteration privileged over its predecessor—in other words, without the end orientation and implicit hierarchy of progress. "Processural time" is another formulation of developmental time in that it allows for a form that is growing or evolving; that is, it allows for a truly dynamic condition by implying a simultaneity of experiences that are processed into a fluctuating "whole" at any given moment. In this sense, the pause during which I remove a splinter from my hand before continuing to push the Room is as important a temporal feature of *Plaatsbepaling* as is the choice to have the Room visit a gallery during an exhibition for one day only, and to move continuously rather than having small movement interludes at specified times. The pause, the single day, and the continuity of motion are components coexisting within the process.



Using *Plaatsbepaling* as an example, it is clear to see how isolated phenomenological or experiential accounts of movement might not give an adequate overview of a performance or installation. Returning to Jameson's reference to "the room," cited at the beginning of this section, we are confronted by the intriguing suggestion that existential time is a product of an older collective time, and perhaps it also generates its own space; that the room is at once a containment and a going beyond its boundaries. We see the very dilemma of needing to account for both the spatiality of the moment and the trajectory of time, for both the mutation of a structure and the collective physical experiences of bodies. Some notion of collectivity is highly relevant to *Plaatsbepaling* because it (along with all previous *Room with a View* installations) is a collaboration, and because the viewers at each gallery comprised a mini-community and affected the installation by influencing the quality of my movement. Once again Lynn's description of his work is illuminating: "There is no instancing of form but rather the distribution of elements in sequential patterns according to differing speeds, accelerations, decays, and trajectories" (1999, 271). I pushed the Room in gallery spaces populated by people (the visitors); therefore the accelerations, decays, and trajectories were shaped by the presence of others. To put it bluntly, I needed an awareness of who was around so as to not mow them down with a one-ton wooden structure. I maintained an awareness of the physical agility of those around me: whether there were people using crutches or wheelchairs, children running, or people sitting or simply not conscious of the movements of the Room. This much is obvious, but groupings of people had less explicit influences on me too.

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At the Witte de With in Rotterdam there was more of a pressure to "perform." The choreography of *Plaatsbepaling* includes specific pauses and breaks when I either step away from the Room or leave the space entirely. I sensed a certain discontent when I disrupted the motion by leaving, and particularly when I began the next sequence unobtrusively, simply by slipping into the space without making any announcement that the performance was continuing. I was at my most concentrated when the numbers were small because there seemed to be less of a divide between myself as the performer and others as the viewers. Small groups seemed prepared to take the journey with me at the pace that emerged, rather than attempting to impose preestablished temporal expectations upon the action. At the Museum for Modern Art in Arnhem I felt as if I had been integrated into the daily pattern of families and art students busying themselves on a Saturday. Many seemed not to have come to see the installation, but happened upon it. Their patterns of behavior became more apparent than at the Witte de With. At one point I encountered a problem: the Room got stuck on an uneven patch of the floor. As I had been pushing the Room for hours, I simply did not





have the strength to overcome this minor obstacle. An older man walked straight up and spoke to me in Dutch, and though I could not understand his words I knew he was offering assistance. I said "Yes, thank you very much," and he threw his weight behind the Room with me. It took only a moment to free it. Then he disappeared into the crowd and I carried on. Another individual deliberately ignored the Room and my activity. He was there to see the paintings and did not want to be interrupted for an instant by anything else, even if it was large and, at times, very close to him. Cycles became evident, beyond my broad repetition of sequences, when two people who had watched earlier during the day returned for the closing thirty minutes: collective temporality doubling back upon itself. They saw similar sequences though different in lighting, composition of visitors, and my level of energy.<sup>3</sup>

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By now it is clear that I cannot help but retain a sense of experiential time and combine it with some notion of developmental time situated within the dynamic system that is *Plaatsbepaling*. The reason for holding onto the experiential is the ever-present danger of spiraling off into abstraction and losing the awareness that architectural structures and theoretical considerations rely, at some point, upon the presence of the physical body. The way to ensure that the moment of experience of the lived body is not lost is to ensure that the minutiae of sensual experience filter through to—infiltrate?—the meta-level considerations. Instead of acting as deadweight, details of the moment of movement lend a physical credence and poignancy to the sweep of temporality. They also act as a sort of reality check for much philosophical rhetoric. This is epitomized by awarding an equality of significance to the creaking sound of the Room, the sweat patterns my cheek left on the unfinished wood, and the seemingly grander observations of *Plaatsbepaling*'s differences and similarities over time, as well as the challenge it poses to the gallery systemic.

From the perspective of the architect, actual growth, movement, or interaction can seem either simplistic or insignificant, with the effect of marginalizing the role for physical movement within a larger sense of temporality. Nestled within his observations on developmental time, which seem to have great relevance to *Plaatsbepaling*, Lynn asserts that "the principles of design within developmental time, along with the resulting architectural characteristics and effects, should not be evaluated based on the simplistic assumption that if architecture is to investigate time it must literally grow, move, or interact" (1999, 269). But what if it does move and interact, expanding upon that most basic action of exerting physical pressure against structural support? Lynn's model of biological organization can surely account for this, but his priorities are elsewhere. In a similar way,

Charles Jencks's poetics of the organic within architecture inflate the moment of experience so that the temporalities of embodiment and of gesture fall off the scale. He writes that "we mortals grow, mature, and die in time; our structures, our teeth, and bones, like buildings, are the only things that survive us" (1999, 176). This is an example of architects viewing time on too grand a scale to do justice to the intimacy of the movement of live performance of the sort that is relevant to *Plaatsbepaling*. Jencks posits six kinds of architectural time: ephemeral, personal, urban, cultural, evolutionary, and cosmic. Yet even the seemingly shortest time frames (the ephemeral and the personal) do not grasp the fleeting and intimate temporality of a physical gesture, of a moment of exertion. The ephemeral is defined as tents, inflatable buildings, or skyscrapers that are erected and torn down in ten-year cycles. The personal corresponds to three score and ten, the "individual's life as the unit" (ibid., 177-178).

We do not need to look to the human trajectory of birth, growth, maturity, and death in order to understand an embodied cycle of time. Developmental time can occur according to smaller cycles, such as the simple cycle of exhaustion that is integral to *Plaatsbepaling* and that manifests itself according to diminishing levels of energy behind the "push." I understand what Jameson means when he says that walls make you conscious of a limit or closure and make you very aware of the many ways you transcend it. The walls of the Room made me aware of the limitations of standard conceptions of phenomenological or experiential time and challenged me to rethink what I am really doing when I reflect upon movement. These walls were not for containing but for climbing over.

## STRANGE MEANDERINGS: AN EMBODIED POETICS

178 *trajets* is an installation with bodies moving in moving structures. A convergence of people, robotics, imagery, and computer sensing, it is an example of full-body human-computer interaction. Although not a game, people play in it; although not a performance, there is an element of performativity; although not VR, it is immersive. It is a fluid space, a space of interactivity inspired by the kinaesthetic trajectories of dancing bodies; as such it has its own poetics, structures of meaning, and social interactions.<sup>4</sup> To use Deleuze's words, it makes "movement itself a work" (1994, 8). The goal of this section is to sketch a phenomenological account of a responsive installation, and to present a range of concepts that emerge directly from the experience of creating and being in this technologically mediated environment. These concepts constitute a phenomenological poetics of responsivity and may shed light on encounters with other such environments or systems, whether artistic or pedestrian, performative or mundane.<sup>5</sup>

The phenomenology relevant to *trajets* differs slightly from the phenomenological approaches to the other projects discussed in this book in which direct experience as a performer in front of a public was the basis of my observations. I did not perform in *trajets*, at least in the conventional modality of live dance performance. *trajets* transformed the roles of the performer and performativity; they became distributed, or parallel, just as the operation of computer systems required to drive the installation was parallel. The role of the performer, the one who makes aesthetically significant actions that shape the experience, was shared among the audience members, rotating



It is a question of making movement itself a work, without interposition; of substituting direct signs for mediate representations; of inventing vibrations, rotations, whirlings, gravitations, dances or leaps which directly touch the mind.

— GILLES DELEUZE, *Difference and Repetition*

screens, and visual imagery of moving bodies. As such, *trajets* somewhat shifts the approach adopted by this book, which asserts the value of the performer's lived experience as a catalyst for understanding wider cultural engagements between humans and computers. Not only is the locus of performance shared by organic and inorganic structures of varying degrees of materiality, but questions of voice and point of view are particularly complex in phenomenological writing around *trajets*. The result is that this section contains an interweaving of slightly different experiential perspectives: of the performing body for the video capture, of the co-artistic director, of the body immersed in the installation, and of the observer of others within the installation. It is too simple to regard the artistic director and observational perspectives as the *outside* perspectives, and the immersion in the installation and video capture as the *inside* perspectives, when experientially all perspectives are interrelated and differently embodied. They are adjacent, or close. As such, the methodological approach to *trajets* begins with a first-person phenomenology and ends with an ecosystemic approach. This journey is facilitated by a transition from Merleau-Ponty's idea of flesh to Deleuze's construction of metabolism. The layering and overlapping of these approaches are synchronous with the desire to address trajectories rather than static positions with *trajets*, and are nicely addressed by geographer Ash Amin who calls places "the location of the intersection of disparate trajectories," indicating that they are sites of negotiation within a "politics of propinquity" (cited in Massey 2003, 6). *trajets*, like *Plaatsbepaling* but across entirely different media, is a place of kinaesthetic negotiation. And the kinaesthetic is at the heart of phenomenological description of our technologically mediated lives.

It was never my intention to offer a poetics. This emerged as an accidental by-product of a close phenomenological consideration of *trajets* and expands the reflections on temporality pertaining to *Plaatsbepaling* from the first part of this chapter. I am wary of offering a poetics due to a certain amount of confusion over what it is and how it functions. Prior to sketching a contemporary, fluid poetics that may be useful for both creators and participants of responsive systems, it is useful to clarify the scope and function of this poetics by first charting what it is not: it is not just about poetic writing, it is not a term indicating a generalized and diluted sense of artistic expression, and finally it is not a taxonomic and prescriptive outline of concepts and structures for constructing effective art and technology projects. The poetics offered in this chapter is more Bachelardian than Aristotelian, and is based on concepts that are at the same time fluid conditions of experience such as kinaesthesia, impulse, flesh, metabolism, and ecosystem. Such a poetics intends to extend, elaborate, complicate, and deepen experience, not to tidy it up for easy analysis.

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Aristotle's famous treatise on poetry is an enduring cultural model for the shape and function of a poetics. He offers a breakdown of the elements of tragedy, comedy, and the epic poem, including a controversial theory of catharsis. His *Poetics*, reflecting the concerns of its epoch, aims to clarify the form and function of poetry, and to provide the tools and techniques not only for understanding it, but also for writing it. *Poetics* is the original literary critical text. Aristotle is particular, even prescriptive, regarding what a poem needs to include and how the "media" should function. In this case media refers to rhythm, song, and verse: "Our topic is poetry in itself and its kinds, and what potential each has; how plots should be constructed if the composition is to turn out well; also, from how many parts it is [constituted], and of what sort they are" (1987, 1).

Offering a classically inspired poetics of today's new media is not an outrageous suggestion because artists, dancers, and game designers developing or refining their skills might want instructions on how to construct a "good" piece of work. Brenda Laurel did just this. Her book *Computers as Theatre* (first published in 1991), which looked to Aristotle to construct a poetics for digital narrative, was influential in the 1990s for associating two areas of research and practice that were, quite simply, worlds apart. Anyone working in performance and computers nods their head to this book for suggesting, at that time, the inconceivable to computer science communities that did not contain many actors or performers: that computers and computer programming might be analyzed in terms of the practices of an embodied art form such as theater. Now that computer-controlled visual and sonic media are used in performance quite extensively, and the space of the computer

is a site for performances of all sorts (from improvisation in online communities to web performances to more virtual performances such as viewing architecture as performing bodies), Laurel's categories and instructions regarding plot, character, and narrative arc seem to be confining, just as we would not necessarily look to Aristotle to construct a poem. They are useful as tools for understanding, and for the perspectives they opened, but are not necessarily pushing at the boundaries of creative performative composition.<sup>6</sup>

There is more than one way to do a poetics. Bachelard provides an alternative to a prescriptive approaches. His *Poetics of Space* (1969) endeavors to give expression to the material imagination, and it is arrived at phenomenologically rather than through analysis of components. Bachelard combines a reading of poems and literature with his own sensations, imagination, and memories to write an evocative book that has the power to make subjective experience resonate broadly. This poetics is read through our physical and emotional experiences of specific structures such as houses, shells, nests, and corners, and also through the more abstracted designations of miniature, intimate, immense, outside and inside, and roundness. Each of these structures is both a notion and an experience, each has the characteristics of being poetically abstract and concretely poetic at the same time, or according to what is more meaningful for us at the time. The terms of Bachelard's poetics are experiential rather than formal, and their effectiveness resides in the way they resonate across people's personal worlds. While his poetics is not intended to instruct (such as how to construct the best poetry of space, or simply how best to live in space), it has the potential to provoke a sensory and intellectual awakening of the creative imagination. The poetics of responsivity that emerges through my discussion of *trajets* is not intended to be a primer on how to construct a responsive installation. It is not a set of techniques, but it unearths a set of experiential categories, living concepts that may engender a sensory and intellectual awakening to the shared experience of responsive media. Like Bachelard, the intention is to open up an experience through the construction of a poetics, with potential impact upon the imagination, sensibility, and expression of those who read it.



# RESPONSIVITY OUT OF INTERACTIVITY

182 The question of whether to use the word *interactive* or the word *responsive* to describe the art created with sensor-based computational systems is a leitmotiv in this book. In section 1.14 on technology I began to sketch reasons for using "responsive," and this discussion is revisited in chapter 4 on motion capture, particularly with respect to constructing an ethical framework of responsibility out of responsivity. It is easy to slide between "interactivity" and "responsivity" when discussing work like *trajets*. The tendency is to use interactive as a meta-level placeholder for the genre of installation inhabited by *trajets*, with meta, in this case, referring to institutions, ideology, discourse, and logic, as well as to categories within the worlds of art, computing, industry, and academia. The term interactive can also be used to describe the technologies and the logic of user experience, but this is where it begins to fall short because it means too many things or because, in the end, it refers primarily to decision-making mechanisms for screen-based media such as DVDs and Web sites, or automated bank tellers and subway ticket dispensers. The need to speak in terms of responsivity emerges at the same time as the need to speak phenomenologically from multisensory lived experience, or once there is an ambiguity of reaction programmed into the system.<sup>7</sup> In the case of *trajets*, responsivity is more effective than interactivity at describing the moment of sensory experience within the installation, particularly once the social or ethical dimension of relations between people or across people and the screens needs to be considered. Following Levinas, it is possible to affirm that the deep logic of subjective experience is structured in a relation of responsibility or, to use other words, responsivity to the other (Critchley 2002a, 21).

Cyberspace and the space of virtuality require us to rethink matter and corporeality to accommodate their strange meanderings.

—ELIZABETH GROSZ, *Architecture from the Outside*

A dialogue with Margaret Morse's "Poetics of Interactivity" (2003) acts as a useful transition between positing the relevance of a phenomenological poetics and providing a more finely grained articulation of the debate over whether to use the qualifier interactive or responsive for installations such as *trajets*. Morse effectively captures much that is contentious and alluring about interactivity, and I use her argument to make a case, once again, for responsiveness. Her poetics offers the categories of persona, links, and immersion, and provides a contextualization of these through a discussion of subjectivity, intersubjectivity, and metainteractivity. The poetics of responsiveness offered in this chapter builds upon some of Morse's aspects of interactivity and takes them further in order to account explicitly for the complexities of full-body engagement in participatory installations, or possibly other sensor-mediated user experiences. I will base my discussion around *trajets*; readers may make connections with other artworks, products, or encounters with social computing.

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Responsivity builds upon aspects of interactivity but diverges from it too. Its poetics unfolds across concepts and qualities drawn from Maurice Merleau-Ponty, Hillel Schwartz, and Gilles Deleuze for their uncanny ability to elaborate, and sometimes problematize, a phenomenological approach to *trajets*. The terms of this poetics of responsiveness appear in figure 36.

These terms are loosely grouped according to the following logic: dynamics of the body, reconstruction of physicality, and extrapolations from the body onto other social constructions or groupings.

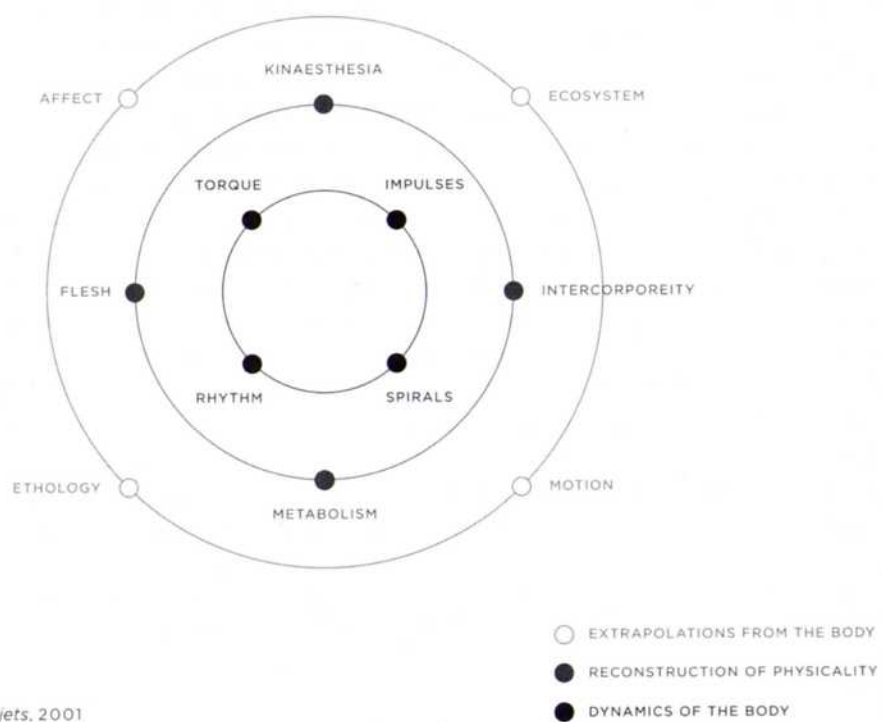
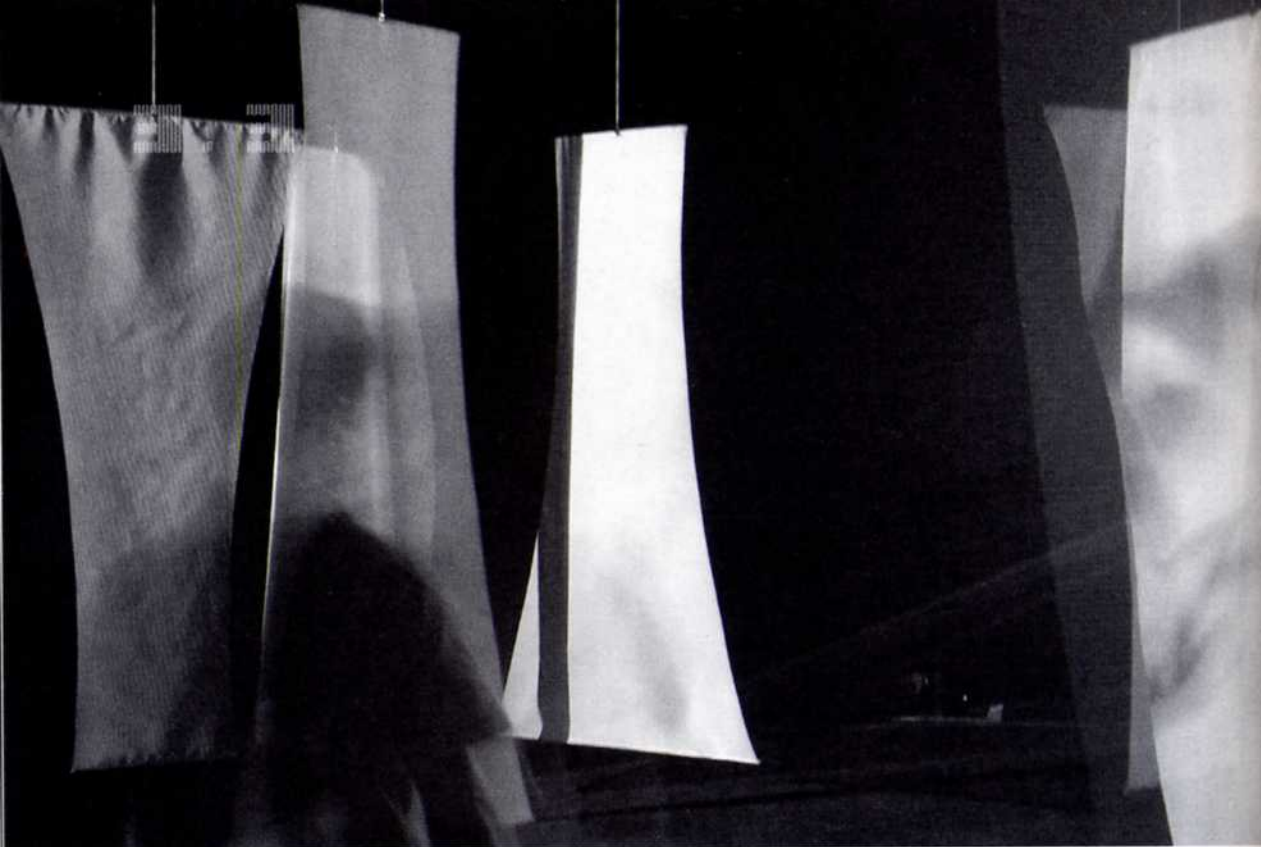


FIG. 36 above, *trajets*, 2001





It is clear that not all of the terms originate with Merleau-Ponty (1964a, 1968). The creation of a poetics of responsivity required input from other sources: Schwartz (1992) provided a set of concepts dealing directly with moving bodies, and Deleuze (1992) allowed for a further reworking of the notion of a body in such a way that the full system of *trajets* could be illuminated. A drawing together of Deleuze and Merleau-Ponty may seem paradoxical or even blasphemous to the faithful from both sides. Merleau-Ponty seems to hold sacred the form of the human body, while Deleuze disintegrates it into forces, planes, and directions. My kinetic corporeal expansion of Merleau-Ponty is twinned with a phenomenological twist on Deleuze: I enhance moments of vibration and disequilibrium in Merleau-Ponty's thought at the same time as I ground our encounter with Deleuzian non-bodies, even when abstracted as sounds or ideas, in a concrete moment of experiential encounter. That I hold onto an intimate, experiential point of encounter with ideas in Deleuze is perhaps more provocative (or dismaying to some) than that I stretch Merleau-Ponty into the field of kinaesthetic cyborg discourse. Even if it is quiet contemplation of an idea, daydreaming, observing planets through a telescope, I can never remove the corporeality from the perception of other bodies no matter how they are construed. I hold onto embodied cognition, but am happy to spread and distribute subjectivity across a range of states and entities. The bodies through which and with which I respond may be without organs, may be transformed or reconfigured, or hybrid, but they are never disembodied or immaterial.<sup>8</sup>

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FIG. 37 above, *trajets*, 2001



The poetics of responsivity to emerge from these deliberations provides a philosophical and experiential layer that is fundamentally incomplete. Depending on the experience and the needs of the individual, it can be read alongside complementary poetics, such as the one offered by Morse around interactivity, or the much older one offered by Bachelard around space, or others.<sup>9</sup> Morse's poetics takes us part of the way to accounting for performance by opening the window to corporeality. She argues for embodiment and characterizes interaction as "touching, moving, speaking, gesturing or another corporeal means" to deliver input to a computer (2003, 19), but she also makes very clear why interactivity remains limited in scope: "Interactivity is not just an instrument or a perhaps irritating interval between clicking and getting somewhere else but an event that brings corporeal and cognitive awareness to this increasingly ubiquitous feature of the contemporary world" (*ibid.*, 18).

186 This reference to the interval between clicking and getting a result indicates that interactivity is still largely entrenched in the gestures and interface of the desktop computer, the use of which requires performative enactments of sorts, but not the performances that animate the focus of this book. It is true that interactivity can be, and has been, construed in a more expansively corporeal way, but there are certain assumptions behind a poetics of interactivity that are central and necessary to engaging with media narratives through the computer and keyboard interface. Instead of diluting and stretching the focus of interactivity so that it refers to too many things, I argue for respecting its assumptions and focus, and augmenting them with additional terms, such as those from a poetics of responsivity. The most significant distinctions to be made between a poetics of interactivity and one of responsivity relate to the nature of action and the construction of subject. Yet from Morse's consideration of the interactive subjectivity, an argument for intercorporeity can be generated. Equally, her descriptions of anthropomorphic tension and metainteractivity can be taken further into a poetics of responsivity.

Aspects of responsivity missing from the standard model of interactivity include the passive spectrum of human reactions, and constructions of embodiment that differ from the model of the hard subject. Morse writes, "To interact is a kind of doing that entails purposiveness, conclusiveness and agency—qualities that, namely, point to a subject" (*ibid.*, 20). Purposive decision making covers a certain range of actions of the autonomous agent, but is a construction of agency generous enough to include other states and actions? The acts of listening, prevaricating, meandering, stumbling, thinking, reassessing, and hesitating; the states of confusion, uncertainty, frivolity, intimacy,

and perhaps the less celebrated human reactions are hard to reconcile with the purposive interactive model, which seems to be based on what Katherine Hayles would call the liberal humanist subject: this autonomous, decisive, effective individual, with a clear and lasting subjectivity.<sup>10</sup> Strange meanderings, to use Grosz's words, are missing from this model as well as alternate constructions of corporeality, as if opening the window to this side of the human condition might result in weak interactive systems.<sup>11</sup> This is not to discredit agency, but to question whether it inhabits only the construction of the singular, decisive, interactive subject. I suggest that agency might be spread across a range of human modalities, distributed across bodies and across materialities.

Debates around the construction of subjectivity are never rapidly resolved, but to keep the focus of this discussion to the divergences and convergences of interactivity and responsivity the prefix "inter" can be questioned. Inter assumes that the components of the action are separate: two or more discrete unities spanned through an interaction. Since the construction of subjects is key to interactivity, the question becomes who or what are the relevant subjects in any particular context? Francisco Varela has a compelling take on this, seeing interaction as occurring within an organism, across a "mesh of virtual selves" including various identities (cellular, immune, cognitive) "that manifest in different modes of interaction" (1995, 211). This takes us part of the way toward fracturing the notion of the contained subject of interactivity, and Morse takes us a bit further when she charts a basic anthropomorphist tension latent in her poetics of interactivity. Both Varela's identification of an inward dynamic within a body and Morse's suggestion that partners in interactivity might include the nonhuman will be taken further in a construction of corporeality relevant to reversibility. She asks an important question: when the term interactive is used, are we suggesting that "humans involved in the roles of author, designer, programmer" connect with "users" through "various technological configurations" as medium? Or do we accept that computers cannot be reduced to mediums or mere computational tools and might deserve to be considered persons? Morse's consideration of interactivity lays the foundation for a poetics of responsivity when she says "binary distinctions between human and nonhuman and between open and closed do not bear close scrutiny" (2003, 20). The problematic becomes whether interaction occurs across a human-to-human connection through the computer, or whether the computer can step in to the relation as one of the engaging partners.

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I take the potential for responsivity across human and nonhuman further in sections that follow by expanding constructions of corporeality through an enhancement of the kinaesthetic qualities





of the act of responding. As will be expanded in the following chapter on motion capture, I do not agonize over whether I should evade anthropomorphic tendencies, believing instead that we are beings who anthropomorphize and who take some degree of pleasure in it, and that to pretend otherwise is to deny a powerful experiential trait that resonates widely.<sup>12</sup> If we look to the philosophical notion of reversibility, which provides perceptual and existential depth, to responsivity, the duality between machine and human, between object and subject is muddled, and the space between human and system is brought to life. What matters is not whether the computer is a tool or a person, but whether the engagement is life-enhancing or destructive. This is where ethics come in, and where the subtle and personal act of responding has more weight than simply the definition of subjectivity or decisive action.

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Another point of variance between a poetics of responsivity and a poetics of interactivity is the belief that interactivity is a state achieved once the system works. Morse indicates, entirely accurately, that the interactive state follows "painful effort and myriad unsuccessful, broken, and invalid connections and attempts to interact that simply don't work" (*ibid.*, 22). When the links are made successfully, we can speak of interactivity. Responsivity, however, can apply even with a faulty system, an imperfect system, a flailing or failing system. It can also occur with an imaginary system (except, perhaps, on opening night). There are degrees of not working that can have extraordinarily rich responsive potential: one of the earliest experiments in motion capture I participated in was an improvisation with an older Polhemus electromagnetic motion capture system. The richest responsive moments were when the figure I was animating in real time from my body movements froze because I got too close to the sphere that emitted the magnetic field. The figure froze and then had to leap to catch up with me once the signal was reestablished, giving it a sense of autonomy, even agency. Another evocative moment with a malfunctioning system occurred when I stepped over the sphere (which rested on the floor) and the figure I was animating stretched and then inverted, the shift in my position in space having scrambled the data. Responsivity can occur while the system is malfunctioning, just as living is what occurs while the prototype is being iterated.

Interactivity need not be invisible, and on the basis of this argument Morse situates the questions of conscious awareness and metainteractivity. The desire for ubiquitous computing to offer invisible reactions on the part of an ambient, embedded system is not central to her poetics, nor is it to a poetics of responsivity. In order to provide social and physical texture, one might even say friction, it is necessary for there to be a sense of decision making. "Awareness of mediation and its sensory

material of expression" is central for Morse so as not to slip into fantasy; it is central for a poetics of responsivity so as to be reminded continually that there is a process of responding occurring and that this involves more than the solitary choices of the subject (ibid.). There is a subtle difference at stake: instead of consciously being aware that we are subjects making choices such as altering our behaving to engage an interactive system, we are aware, at least latently, that an open exchange of responsivity is set in motion. We travel across layers of consciousness, and are able to be interrupted by the system. We may not be in rational analytic mode throughout, but we are not in an unconscious or trance state either. Morse's indication that, in fact, the social and artistic richness in this contentiously defined area of work resides in "metainteractive aesthetic strategies" that "foreground the contradictions and mystifications of interactivity" is true also of responsive systems (ibid., 18). She identifies a sort of phenomenological hyper-reflective turn through which an interactive structure can address its own complexities, and possibly even critique its conventions of interactivity. This is like taking the process of reflection into the reflective document, making transparent the categories and biases that shape our intellectual and physical engagement, and is highly relevant to mediated performances and installations. The structure of a responsive work is such that we are made aware *that* we are responding *while* we are responding, that we are playing a role in a greater system of responsivity extending beyond our isolated subjective choices. This takes some of the control away from us: we do not control, we respond. If, as Morse suggests, the ability to alter the rules is a feature of interactivity, the ability to have the rules altered in the midst of our engagement is the feature of responsivity (ibid., 21).

## FROM PERFORMANCE TO INSTALLATION

190 Prior to constructing a phenomenological poetics from *trajets* it is useful to describe it. Unlike most of the work described in this book, *trajets* is an installation and not, strictly speaking, a performance. It consists of twenty-one trapezoidal screens suspended from a self-supporting structure. The screens are motorized, and a sensing floor provides the positional data to enable them to react to the proximity of visitors: slowly spiraling away or toward the visitors according to a dynamic of magnetic attraction or repulsion. Images projected onto the screens are of moving bodies and their abstracted kinaesthetic traces; the form of the bodies is less important than the visceral impact of a wide range of movement qualities—flying, falling, straining, flowing, disintegrating. The imagery, too, responds to the visitors as they navigate the space through choreographies of where and when a clip is projected combined with a range of real-time visual effects. The installation is a kinetic, enveloping, responsive environment.

*trajets'* responsivity is facilitated by customized hardware and software: a floor sensing system to locate visitors, motor control for the movement of screens, and choreographic algorithms for screen and visual interaction. The floor uses the principles of electronic resistance to locate people according to pressure and position, while the motor-control system receives this data and activates movement qualities in the screens nearest to the visitors. An overall integration program orchestrates the position of the visitors, the screen behavior, and the selection of video clips, with real-time transformations of the video. A set of movement parameters are attributed to the screens



I do not work on the subject and object—that is the work of the philosopher—but rather on the “traject.” I have even proposed to inscribe the trajectory between the subject and the object to create the neologism “trajective.”

—PAUL VIRILIO, *Politics of the Very Worst*

causing some to appear sensitive, some to appear recalcitrant, some to follow visitors, some to be repelled by visitors, and some to ignore the visitors entirely. The only component of *trajets* that is not directly responsive is the soundscape.<sup>13</sup>

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The title *trajets* comes from Paul Virilio's description of trajectory as the space between the subject and the object. This in-between space is that of movement: the movement of bodies as they are captured in the video sequences, but also the movement within the *trajets* ecosystem that includes movement among the images, the audience, and the rotating screens. The artistic goal for *trajets* was to reconfigure dance into kinaesthetic impulses that would be felt rather than visually assessed. Aware that much video dance plays with the beauty of the dancer's form and creates a narrative based around bodily engagement, frequently across genders or between dancers and the built environment or natural world, Gretchen Schiller and I decided to shift the focus. Equally aware that much media art was purely visual and unintentionally reinforced the hegemony of visual perception at the expense of the other senses, we wondered whether we could create a visual exchange that felt like a physical exchange; whether we could create an installation without live performers that produced a visceral reaction in visitors, as if the live performer were present but invisible.

At the beginning of this section I suggested that *trajets* was not a performance but an installation. Now is the time to question these categories according to the different constructions of corporeality

offered by a poetics of responsivity and also to animate them, the way a puppet has life breathed into it, with Schwartz's kinaesthetic approach that frames bodies and technological advancements in the twentieth century as a "poetry of movement" (Schwartz 1992, 108). Picking up on the discussion from section 3.3, the poetics of interactivity and the poetics of responsivity are based upon divergent embodiments. Embodiment is not a catch-all category, because although we share a basic template we live it differently depending on age, ability, race, gender, illness or health, preoccupation, and occupations. Schwartz uses dance as a basis for distinguishing cultural kinaesthetic preoccupations, and then draws his analysis outward to take into account wider technological advancements such as the rollercoaster, the escalator, the phonograph, the assembly line, and the projector. His analysis of the kinaesthetic can be used to illuminate the shift from a poetics of interactivity to a poetics of responsivity. At the turn of the twentieth century ballet was "a dance of faces, arms, wrists, fingers, ankles and toes" (ibid., 75), just as a poetics of interactivity opens toward paradigms of full-body immersion yet its terms remain those imported from keyboard- and screen-based interactions: arms, wrists, fingers, and (virtual) faces. From "lighter-than-air bodies," the near-virtual or peripheral bodies of interaction, to "heavier-than-air bodies," we see different embodiments. *trajets* works across materials (screens, video, motors, sensing) to provide as broad a range as possible of kinaesthetic reactions, on the part of the media and on the part of the public. Both the public and the screens/images respond; all elements perform. A participatory installation can be seen as a public performance.

The locus of performance in *trajets* is shifted from the specific bodies of the performer (dancer, actor, musician) to the distributed bodies of the screens, image-bodies, and public. The discussion of subjectivity begun in section 3.3 undergoes a first displacement here in terms of kinaesthesia. The *trajets* self is construed in terms of movement, rather than decisive action. Schwartz writes of how the new kinaesthetic is not about empty machinic bodies but about "rhythm, wholeness, fullness, fluidity and a durable connection between the bodiliness of the inner core and the outer expressions of the physical self" (ibid., 104). It is not as if there is no choice and only flow, because by going through certain motions we define ourselves, for "the semantics of the new kinaesthetic, as it moved from the expressive to the operative, and from the operative to the transformative" offers scope to form ourselves in and through our relations with others, including machine-mediated others (ibid., 95). It is, Schwartz says, about understanding the rhythm of our exchanges, not the dualities of self-other, subject-machine: "Bodies could be made whole and mobile only if one understood the principles of rhythm" (ibid., 89).

With these challenges in mind, and with a team of collaborators from software and hardware engineering, architecture, and music, we created an installation that was adjacent to performance, adjacent to video installation, adjacent to daily experience, and adjacent, in the sense of next to or close to, dance, but not exactly dance. This sense of adjacency, where one thing is close to another but not equated with it, is what we aspire to create with every showing of *trajets*: an intimate space, a space of closeness, a space of propinquity within shifting geographical and cultural locations.

The logic of the trajectory is loosely co-relational, converging and diverging; this converges with the logic of the responsivity of *trajets*, which includes the rhythmic structures of delays, lags, motions and speeds, and affective qualities of screen behavior and visuals. These shifts in kinaesthetic quality coincide with shifts in the texture of responsivity. Trajectories are not uniform, nor are they predictable. Some interactive principles can be programmed or choreographed, but fundamentally the richness of interactive systems is the unpredictability in how people respond to what they are offered and in turn how the environment responds to them. The enigmatic blend of response and initiation that characterizes human exchanges has always been the seduction of art that integrates computer sensing systems, and is at the basis of a fundamental dissatisfaction with the term interactive as a qualifier for media art and systems.



# FROM JOINT TO JOINT: PROCESSES PHENOMENOLOGIES

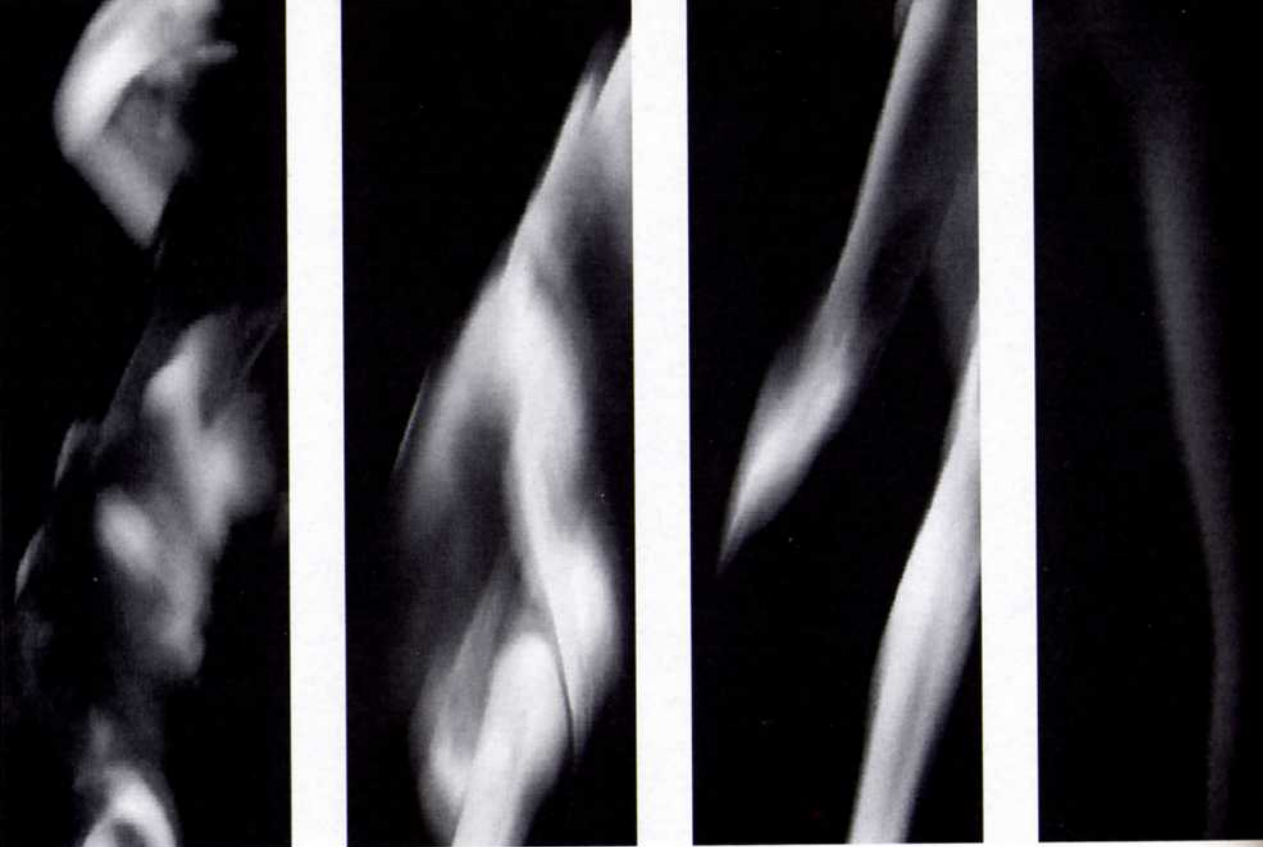
194 The zipper is the device Schwartz uses to illuminate the mechanical equivalent to the "joint to joint" resulting in a graceful gesture or closure. With *trajets* the criteria was not grace of gesture, but kinaesthetic range: weight, falling, straining, floating, flying, spiraling. The joint to joint occurred within one body and across bodies through movement improvisations for the video, which were then triggered by the presence of visitors in the installation and projected across the screens. These movement improvisations began the entire *trajets* research process, and in this section they are examined as the phenomenological basis of *trajets*; although the sensing system, structure, and screens are the dominant materials of the installation, the overall flesh of *trajets* is shaped by the images and the corporeality they introduce into the installation. They are the life force of the piece. Gretchen Schiller and I started from the localized kinaesthetic impulse, shared across bodies through a video camera. The phenomenological voice offered is that of the performer in our video experiments; the concepts to surface through this process play a foundational role in the poetics of responsivity.

The video-shooting process began with experiments in responsivity across body and camera, or a duet between Gretchen's body and mine mediated through the digital video camera. Not interested in virtuosic dance movement, we created contexts where movement might be captured in its fringe states: the transitions, the falls, the slips, the awkward shifts, the unintentional tentativeness of discovery. To use terms from Schwartz, we were interested in heavier-than-air bodies, not

Now these movements, from joint to joint should, as it were, overlap each other, slide into each other.

—FRANÇOIS DELSARTE, cited in Hillel Schwartz, "Torque: The New Kinaesthetic"

pretended lightness. Effort was our focus, and we created our own "torque," a spiraling pull through the camera that integrated the two of us in a peculiar movement duet. Torque, Schwartz's term for the new kinaesthetic, was polyvalent in *trajets*, from the actions of the screens and their pull on the visitors, to the flow of the images across screens and through the space, to the physical technique enacted by Gretchen and myself as we captured the video. We mocked up a rock-climbing wall, blacking out the walls of a narrow corridor with me enacting a climbing technique of wedging and levering my body up the opposing walls with my back against one and my feet on the other. Suspended near the ceiling, with Gretchen lying on the floor shooting directly up with the camera, we began a waiting game. What would happen if I just stayed there, not far above the earth, but far enough above the pedestrian life of the apartment so that I was perched, literally suspended? My lower body strained to find support laterally rather than vertically, my upper body having very little to do apart from registering the shape and form of the walls and ceiling, my gaze re-registering the unfamiliar perspectives while aware that there was another, dominant, observing gaze of the camera. Time passed, but as with any physical exertion it does not pass in a discrete and measured way, not second by second but in groups of seconds, clusters of kinaesthetic states separated by the transitions between them. With inevitable slippages, slight at first, then less controlled, as my tired legs began to experience minor contractions and relaxations, I began my uneven descent toward the earth. These slips were not choreographed but happened through a combination of forces operating on my body: gravity, exertion, fatigue, lapses in concentration, accumulation of

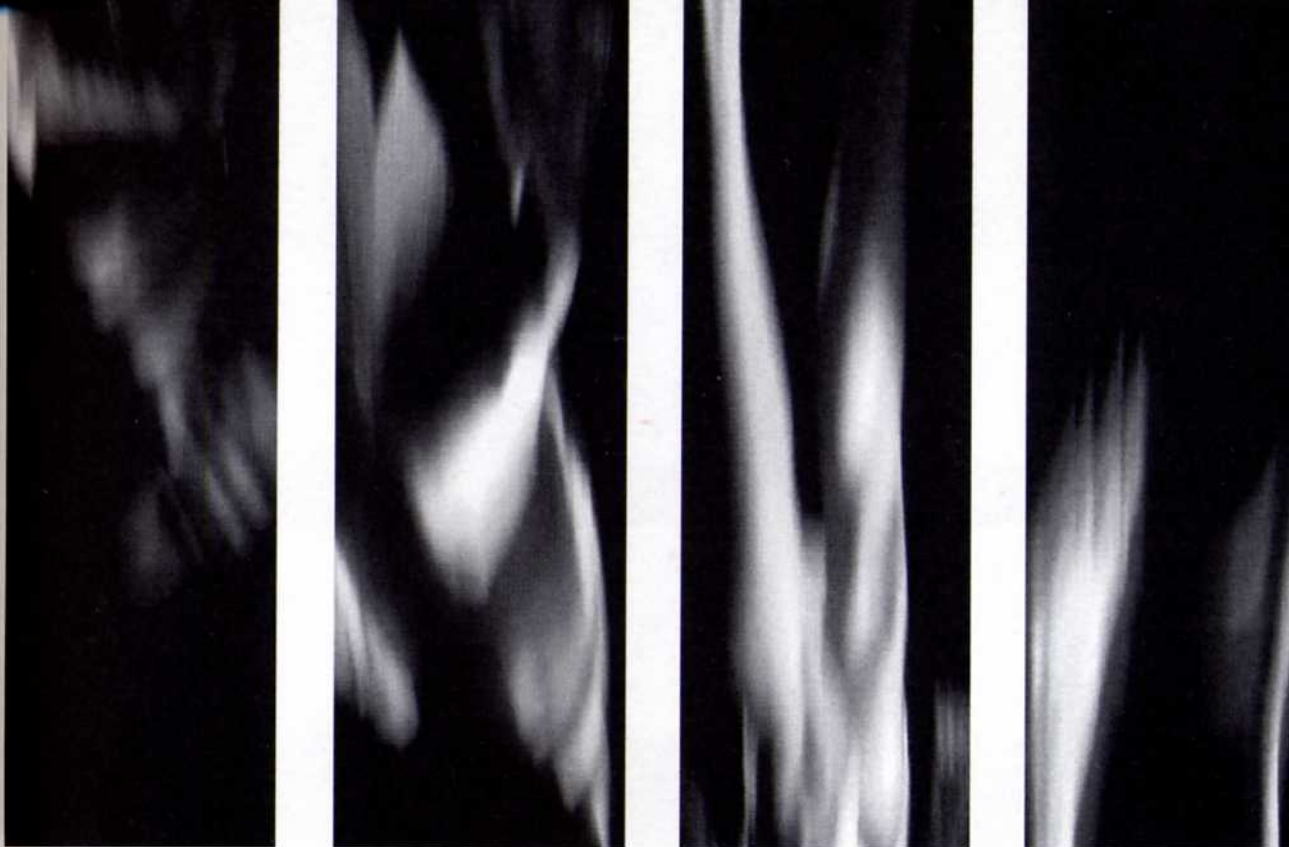


196 sweat causing a film that initially promoted grip but then thwarted it, all contributing to the otherness within me that directed and controlled my movement once I was not looking. The lurches and slippages drew us in, as kinaesthetic events translated through the video. Where did they originate, where would they take me, and how would I respond to the new configuration of my body within its unlikely environment? Once I began to slip I was not sure where I would end up—the only golden rule was that I try not to crash to the ground and land on Gretchen, breaking her nose and the camera. (We were, after all, working with no budget at this stage.) Again, we traversed the kinaesthetic qualities identified by Schwartz; from the “push to the pull-and-slide” his categories were in evidence but in a more chaotic and abject way. We worked with impulses from the core of the body, but in this improvisation the gestures were anything but clean and flowing, and the point of this experiment was to explore interrupted muscular rhythms. Schwartz’s aesthetic remains to a certain extent across the idealized aesthetic of ballet and its transition into modern dance, with the bodily movement still fluid and graceful, with muscularly well-controlled rhythmic impulses (1992, 106, 108). Consistent with the trajectory between subject and object is movement that frays at the edges of subjective control and slips from the grasp of control. Impulse, rhythm, and torque as they break free from containment but do not yet reach their endpoints occur through *trajets*.

The overwhelming sense of this first video shoot was of being in cramped, dark heat at the top of a corridor near the ceiling, with an exaggerated distance between my body and the floor. I could

FIG. 38 above, video sequence from *trajets*, 2001

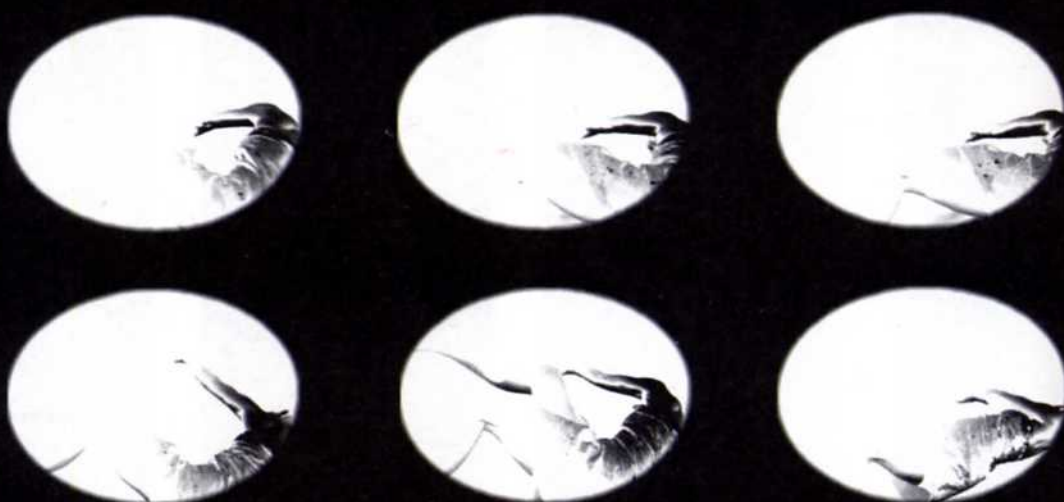




have been five meters rather than five feet in the air. I experienced two of Bachelard's spatial poetics, the cramped space and the "intimate immensity," which according to him is the "movement of the motionless" (1969, 184). Like a perversion of his phenomenology of the nest, I was "huddled into myself," "concealed," in a "state of retreat," "hiding in a corner," relying entirely on movements that were "engraved in my muscles," but I was anything but snug and secure (ibid., 91). Yet at the same time I "flooded the space around me," living an "invented immersion in which I moved about in the heart of a fluid . . . dense matter" (ibid., 207). This complex physical spatiality was then translated or transformed by the camera, and again through the editing process, but for the most part the kinaesthetic qualities were captured at the moment of filming rather than created through digital post-processing, or, after Deleuze, they were captured at the moment of movement.

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The rolls and falls came next, more closely approximating the curvilinear gestures moving from the core of the body, but enhancing further the relinquishing of control. Falling repeatedly from a ladder onto a mattress provided a different kinaesthetic quality: very white and fast, falling from a high vertical position to a low horizontal position according to an arc of varying proportions in a brightly lit room. The moment of initiation of the fall was important: the movement that set my body in motion, that first impulse, rippled out from my head, shoulders, hand—or sometimes the impulse was an idea, an image germinating in my mind and radiating out through my skin and bones until I toppled sideways into space. The rest of my body fell with a loose but not predetermined logic,



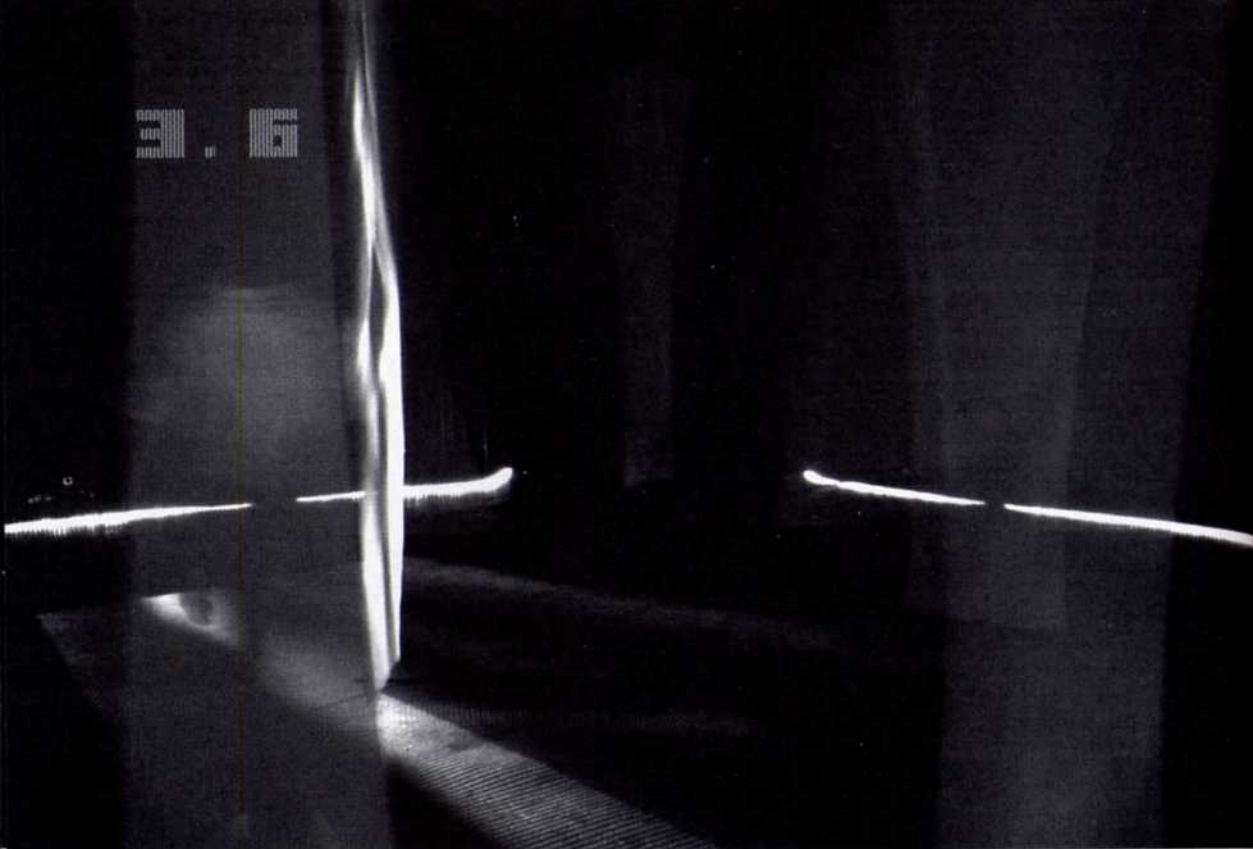
198 the dynamic chain as one body part followed another through space achieving an unexpected rearrangement while falling, as if a string of beads were able to rethread itself in mid-air, mixing its sequence. The moment of impact, although anticipated on an intellectual level, always came as a shock. Earthbound once again, sinking momentarily further than the surface into a sort of impact valley and rebounding; consciousness was a beat or two behind. The sense of time was a convergence of sense data mapped across two kinetic cycles: the rapid repeated loops of climbing and falling nested within the longer span of time that contained this activity and was characterized in itself by fluctuating levels of fatigue and vitality, concentration and distraction; the hamster wheel of repetition that characterizes the creation of performances, whether live or on video: repeat, repeat, repeat, until a state is altered, until a movement is deeply ingrained in physical memory, until it is captured adequately on video. Repetition is not resemblance, as Deleuze explains. Theft and gift are the criteria of repetition, and once again the French word for theft (*vol*) provides extra resonance with the movement and video in *trajets* by virtue of it also meaning flight (Deleuze 1994, 1).

FIG. 39 above, video sequence from *trajets*, 2001

# SKIN, FLESH, METABOLISM

The first conceptual and architectural sketches for the *trajets* environment reflected early desires for the entire space to stretch, breathe, and morph. The dominant metaphor was that of stepping into internal organs or of entering a space that was thick with flesh. The array, or forest, of responsive screens that became the form for *trajets* transposed these concepts into a slightly more manageable architectural form, but maintained the integrity of the concepts. The metaphor of entering into the interior of a body remains relevant, for the complex set of relationships across the screens, people, and images are still readable in terms of a body. The *trajets* screens act as the skins or nodes within the overall flesh of the installation. Skin, as the body's largest organ, receives the imprint of the world and in turn is a filter for projecting the self outward, but equating skin with the two-dimensional and flesh with the three-dimensional is too simplistic. Skin bleeds outward, physically and metaphorically, and flesh is not simply mass: "Why should our bodies end at the skin or include at best other beings encapsulated by skin?" (Haraway 2000, 87). When I confront a screen I see its patterns of light shift, I notice its blemishes and the very weave of its composition, and I see my own shadow or the shadow of another as it glances across the moving surface. My perception is never inert; skin opens itself up to being seen and to receiving traces. Some traces remain, some slowly fade; skin has its own temporality, capable of registering rapid changes and subject to slow, wearing signs of age or the softening effect of a lingering caress. The screens/skins move as with the memory of caresses or traces of people. As a region of contact between people and things, skin can be touched even without an actual physical stroke. The brush of the screen turning, swirling



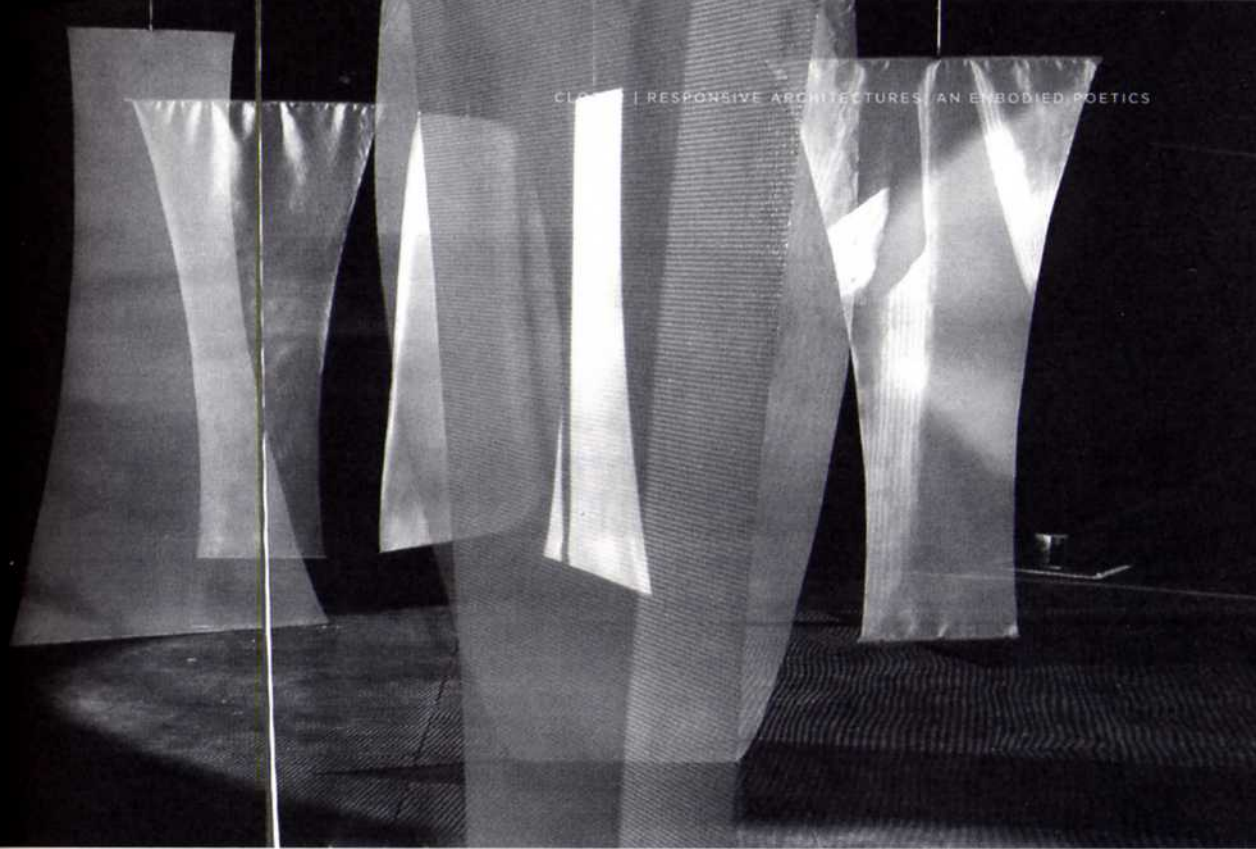


200 the air, rife with intention, is a motion that affects the whole. Once this in-between space of skins is acknowledged, we are in the space of flesh.

*Trajets*, with its conceptual roots in the trajectories between subject and object and its practical manifestation as a cluster of animated screens through which people walk, offers a way to understand Merleau-Ponty's idea of flesh. Flesh is that "thickness" between the seer and the thing, it is "constitutive for the thing of its visibility as for the seer of his corporeity; it is not an obstacle between them, it is their means of communication" (Merleau-Ponty, 1968, 135). It is not enough to say that flesh entails embodied perception, although this in itself is considerable, but that within and through flesh we confront memory, imagination, and intuition. Laura Marks's consideration of skin beyond the screen was written with reference to intercultural film but comes close to a phenomenological description of the experience of the *trajets* screens: "It is most valuable to think of the skin of the film not as a screen, but as a membrane that brings its audience into contact with the material forms of memory" (2000, 243).

Characterized by ontological generosity, flesh issues no imperative to distinguish between past and present, between our technologies and our bodies. As such it is a very rich concept for experimentation across humans and computers, whether artistic, technological, or social. One sort of materiality or another is less a defining characteristic of flesh than a multisensory present.

FIG. 40 above, *trajets*, 2001



Flesh is “not matter, not mind, not substance” but is more of a style of being. From the perspective of *trajets*, flesh can describe the experience of the visitor and be a way of perceiving and inhabiting a space, from the perspective of the media it can be the qualities, textures, and sensory evocations it offers, but one cannot be separated from the other. It is impossible to bracket the experience of the person in the space from what the space is offering. In this sense, flesh operates according to phenomenological intentionality: I am always for the world and the world is always for me, in the endless duet of responsivity we dance in our lives.

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As suggested in chapter 1, it is important to allow space within the concept of flesh for distance or difference, so that it is not construed as some sort of all-encompassing, homogeneous soup. Critics of Merleau-Ponty accuse him of just this: positing some sort of happy, unified, blob-space that does not allow scope for cultural difference, sexual difference, or even otherness. A closer reading of Merleau-Ponty, combined with a real appreciation of the dynamic nature of his concepts, reveals that flesh is “not the union or compound of two substances”; there are other bodies and other landscapes besides my own within flesh, and the fundamental strangeness in “seeing oneself see” or “touching oneself touch” allows for the disruption or displacement of our control over ourselves, others, and the world (Merleau-Ponty 1968, 140). This means that within the flesh of the *trajets* installation there reside varying trajectories of movement and varying distances between elements. Even extreme closeness or proximity involves distance, or some sort of in-between space.

FIG. 41 above, *trajets*, 2001

*trajets* provides a practical example of this. I see the screens, I see myself among the screens, facilitated by my shadow projected among them, but the screens and the images they fleetingly host react to my presence: thanks to the sensing system the screens "see" me, and "the seer and the visible reciprocate one another and we no longer know which sees and which is seen" (ibid., 139). Responsive computer technologies provide a unique literalization of Merleau-Ponty's seeing-seen and touching-touched. The screen rotating to face me is akin to it turning to look at me. This action is a "coiling over of the visible upon the visible"; additionally, this coiling "can traverse, animate other bodies as well as my own" (ibid., 140). This is the dynamic of reversibility and is at the core of a poetics of responsivity. Fundamentally, no one part of the engagement can exert unidirectional control over the other. According to reversibility, subject and object fold into one another. Here, reversibility can be distinguished from interactivity where there is a dominant direction of control. According to responsivity/reversibility there is a constant slippage of control; it ideally might be an equivalent balance between two parties to an exchange, but is more likely to occur across a rhythm, to reintroduce Schwartz's term, across many bodies or corporealities. A poetics of responsivity occurs across an intercorporeal rhythm of activity and passivity, of initiation and response and response and response...

Returning to *trajets*, the bodies in the installation include the members of the public but also the bodies in the video imagery and the bodies of the screens. This is intercorporeity, and the presence of the nonhuman components while not explicitly elaborated by Merleau-Ponty, is a key part of the interpretation of flesh I offer in this book. As it is necessary to expand, and literally flesh out the concept of flesh, it is useful to look to aspects of Deleuze's thought. Merleau-Ponty introduces flesh in a myriad of oblique and enigmatic ways, but does not elaborate it in any great detail beyond providing a strong poetic resonance (calling it a style or an element of being) and locating it through intercorporeality according to a dynamic of reversibility: in this book, both the *whisper[s]* wearables project and *trajets* are used to expose flesh, and Deleuze is one of the thinkers introduced to elaborate it, as if Merleau-Ponty offered the skeleton for flesh and others must be used to put meat on its bones. Or, to refer explicitly to a Deleuzian notion, to give it a *metabolism*. So when Merleau-Ponty asks, "Where are we to put the limit between the body and the world, since the world is flesh?" (Merleau-Ponty 1968, 138), Deleuze's idea of metabolism can be used to begin to answer this question. Flesh metabolized. Of course taking flesh further does not mean drawing a limit between body and world, but it requires an understanding of how we live in a world that is flesh. Deleuze writes, "The speed or slowness of metabolisms, perceptions, actions and reactions link together to constitute



a particular individual in the world" (1992, 628). Further, an individual need not just be human, but may be an animal or nonhuman for we know that "Artifice is part of Nature" and all things are "defined by the arrangements of motions and affects into which it enters, whether these arrangements are artificial or natural" (ibid., 627). Virilio too, offered an idea of metabolism in a discussion of the sorts of proximity that make up the relations between people living in an urban context: metabolic proximity is situated alongside immediate proximity, mechanical proximity, and electromagnetic proximity (Virilio 1999, 40–41). While Deleuze and Virilio obviously are coming from different directions, what is curious is this need to repattern corporeality while holding onto a term that is profoundly biophysical. The subject is rendered metabolic, and in so doing, standard notions of agency and control are dissolved. Deleuze writes: as body is not defined by its form, not by its organs or functions, "neither will you define it as a substance or subject" (1992, 626).

This section on skin, flesh, and metabolism has charted a physico-philosophical transition from considering the experiences of creating the videos for *trajets* to the last section of this chapter, which offers a final component to the poetics of responsivity: a phenomenological consideration of *trajets* as an ecosystem. This takes into account that the experiential viewpoint cannot remain that of the contained subject. Merleau-Ponty is critiqued for sliding into a reinforcement of the view of the solitary experiential subject, but anyone who has read his late work closely will see a dissolution of the subjective caused by the sheer force of visual perception that rivals the Deleuzian plane of immanence. Merleau-Ponty insists that "the visible can thus fill me and occupy me only because I who see it do not see it from the depths of nothingness, but from the midst of itself" (Merleau-Ponty 1968, 113). The space and time of things are "shreds" of myself. I cannot be insulated from my contact with the outside world either through carving for myself a position of interactive mastery, or through negating my own presence. If interactivity is replaced with the potential for disruption inherent in responsivity, rather than the reinforcement of decisions, there can be an emigration into the outside world of touch, vision, and movement.

# LONGITUDE AND LATITUDE

- 204 Taking the distinction between a poetics of interactivity and a poetics of responsivity to a final stage in this section revolves around viewing *trajets* as an ecosystem and integrating this with the expanded view of flesh as metabolism. The poetics of responsivity needs to account not only for a reworking of the self from the decisive subject in the interactive relation to the self interrupted by her engagement with otherness in a system, but also for a responsive situation that may be spread across a community of variously constructed bodies. The actions that sustain narrowly construed models of interactivity coincide with the "man-in-environment" paradigm according to which human beings place themselves apart from or above that which is outside them, acting as masters or stewards, managing the interaction the way we manage our households and the planet. Distinct from this, the ecosystemic or ecophilosophical approach is based on an understanding that we are located within a system, rather than on the initiating end of a chain of actions and decisions beginning with the self and radiating outward. This is not to dissolve the subjective position into a diffuse mysticism, although some advocates of deep ecology do just that. Instead, the position of the subject is replaced by that of an "organism as a knot in the bio-spherical net or field of intrinsic relations" (Roszak 2001, 234). The intrinsic quality of the relations indicates that the elements entering into a relation are constituted in part by this relation, and that without the relation in which they participate they would no longer be the same. Donna Haraway has expressed a similar phenomenon from the perspective of understanding complex wholes and complex processes: "In other words, you can't adequately understand the form by breaking it down to their smallest parts and then adding relationships back" (2000, 50-51).

No one knows ahead of time the affects one is capable of...you do not know  
beforehand what a body or mind can do, in a given encounter, a given arrangement,  
a given combination.

—GILLES DELEUZE, "Ethology: Spinoza and Us"

*trajets* has an ecosystemic character, by which is meant that it is comprised of "organisms, parts of organisms and communities of organisms" integrated into a whole "whose essential properties arise from the interactions and interdependence of these parts" (Capra 1996, 34). As a hybrid space it redefines relations across humans and computer systems, while respecting the impact that each component has on the others. It is true that *trajets* is not a self-contained ecosystem and that it operates by being plugged into the electricity grid of its host city, inviting a wider ecosystemic critique of media art as either parasitic or harmoniously integrated into a whole. It is possible to adopt a purist organic approach to the interpretation of an ecosystem, questioning whether it can be applied across humans, digital images, machines, and software, but any contemporary ecosystemic approach needs to acknowledge that we exist alongside our machinic progeny; we are linked together, or networked, "through feeding relations," where our "food webs" may include nutrients, energy, poetry, and the stuff that spawns imaginations (ibid.). I have drawn ecosystemic and phenomenological approaches together in the consideration of *trajets* because, in the words of Warwick Fox, an ecosystemic approach breaks down the distinctions drawn between ourselves and our environments, revealing instead the intimate and manifold relationships that occur between self and environment (1990, 8). A phenomenological approach emphasizes the lived experience of bodies within the ecosystem. Surface critiques of phenomenology might say that appreciating the multiplicity of a systemic whole cannot be attempted from the perspective of the singular embodied subject, but by now it has been made clear that the subject need not be the atomistic



construction needing always to reinforce itself. Conceptions of flesh, corporeality, and metabolism have expanded that; further, it is also duplicitous to imply that we are anything but entrenched within our ecosystemic wholes. Pretending to a godlike external position is unacceptable to an approach that understands all through networked relations. The intrinsic, hyper-reflective view is the best way to attempt an understanding of relations. And of course it will only ever be partial; it needs to be augmented by other such views. As indicated by Fritjof Capra, the web of relationships in any ecosystem is "described in terms of a corresponding network of concepts and models, none of which is any more fundamental than the others" (1996, 41). The poetics of responsivity that expands to include concepts from an ecosystemic view is no exception.

Expanding the discussion, *trajets* can be seen as an ecosystem for the following reasons:

1. **It is a convergence of parts into a networked whole according to complex choreographies of mutually interacting elements.**
- 206 2. **Visual and kinetic mappings of the whole are generated and networked into different locations (currently 2-D and 3-D graphics).**
3. **It has a contained and otherworldly feel—spending time in *trajets* can enact a shift upon states of body and consciousness.**

That the *trajets* system contains bodies of different materialities has been argued previously; here the question is posed as to whether *trajets* itself is a body. I suggest that it is, and that this body is defined in terms of choreography and metabolism. The flows of matter and energy through this ecosystem are indeed a "continuation of the metabolic pathways through organisms" (Capra 1996, 35). Deleuze, in his reading of Spinoza, suggests that bodies can be almost anything—sounds, ideas, animals, collectivities—but the factors that unite bodies are complex relations of speed and slowness, combined with a capacity for affecting and being affected. Entities are construed in terms of movement and affect. He writes: "Concretely, if you define bodies and thoughts as capacities for affecting and being affected, many things change. You will define an animal or a human being not by its form, its organs and its functions and not as a subject either; you will define it by the affects of which it is capable" (Deleuze 1992, 626).

Ethology, described by Deleuze, is a science of behavior or character formation based on speed and slowness, on affecting and being affected, which assumes that "an animal, a thing, is never

separable from its relations with the world" (ibid., 628). I suggest that an ethology is a way of describing the choreography in responsive systems, or ecosystems. This is not a fully scripted system like a formal choreography where the pattern of bodies in space to music is tightly defined, and also not a completely unshaped and random set of interactions. Once choreography is seen to be a variation of ethology, it is clear why choreographing responsive systems is notoriously complex, despite being intuitively simple. Abstractly, what makes more sense than having a range of media respond to the physical movements of dancers or participants, so that the dancers or participants can respond in turn to the media? Practically, it is not so simple because what is posited is the open choreography of a complex system. Standard approaches to responsive choreography tend to occupy both ends of a rule-based spectrum: either the media responds to human movement according to a literal or one-to-one correspondence or the media responds in a random or alleatory way. Literal correspondence can be the most satisfying in the short term because the interaction is clear: for example, I walk to section x of the room and sound x is triggered, or I move my arm up to form body shape y and image y appears. Random or alleatory structures are located at the other end of the spectrum: the correspondence is often so loose that the physical movement can trigger any option within an array of images or sound, with the meaning of the interaction created in the moment by the combination of events that occur. The limitation of the one-to-one correspondence end of the responsive spectrum is that it rapidly becomes dull due to lack of range; the limitation of the random end of the spectrum is that it becomes equally dull because, ironically, undiluted randomness is experientially equivalent to the entirely prescriptive: when the logic is purely alleatory, the question frequently asked of interactive performance is whether it is prerecorded and not live at all. The tension here becomes one of scripted responsivity versus a contained generative system, evolving on its own, emergent but closed.<sup>14</sup>

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The challenge arises when it is desirable for various components of an installation (such as images, sound, human movement) to have loosely choreographed and interrelated responses, similar to an ecosystem where the impact that one component has on others is never totally random, nor is it entirely bound to one result. Additionally, the shared actions create affective and kinaesthetic states. With *trajets*, the overall choreography includes the positions of multiple visitors (dispersed spatially and temporally), the behaviors of multiple screens, and the triggering of multiple images. The choreographed environment is a whole, but it is also made up of many seemingly separate parts: screens, motors, projections, people. Rules are embedded within rules to reflect the evolving states of the installation, but also space is left open for unanticipated responses. If the entire



installation is taken to be a body, Deleuze's interpretation of ethology can provide a way of seeing the map of this body and can provide a logic for choreographing the components. He relies on the designations of longitude and latitude. Longitude of a body is "the set of relations of speed and slowness, of motion and rest, between particles that compose it," while latitude is "the set of affects that occupy a body at each moment, that is, the intensive states of an anonymous force (force for existing, capacity for being affective)" (Deleuze 1992, 629). What Deleuze has sketched is uncanny for seeming to speak directly from the phenomenological perspective of choreographer, or ethologist, of *trajets*. When Schiller and I decide on rules or logic for integrating position of people, position of screens, visual sequences, and visual effects, we do so from within, from an "intensive" or intrinsic position, like the knots in the biospherical field of intrinsic relations previously referenced. We take our place in the ecosystem and read the combination of affect and speed generated by different combinations of elements. I call it a reading, but it is done through our bodies. We read the visceral responses evoked within us, and, by extrapolating outward across "extensive" relations, we work with the programmers to devise rule sets (algorithms) to be written into the software. The extensive relations are derived from the intensive positions and, in turn, compound them (ibid., 628). The software algorithms contribute to a form of choreographic scripting taking into account the affective qualities we sense and how these are shaped by motion or stillness, both within ourselves and across the screens, visuals, and each other. It is important to note that affect here does not only mean emotions, but also refers to broader designations of mood, mental or physical dispositions, material impressions, and metabolism. There is a strong link between the metabolic state of the system and the metabolisms of the parts. The suggestion that there might be nested metabolisms in *trajets* allows for a transition to the next ecosystemic quality, the alternate visual mappings, by way of a serious question posed by Deleuze: "How can a being take another being into its world, while preserving or respecting the other's own relations and world?" (ibid.).

The second ecosystemic quality is the mapping function that extrapolates the activity within the installation into several visual forms. Kinetic, updating visualizations of the behavior of the people and the screens are projected into other adjacent locations, outside the installation or on the Web. The images are two- and three-dimensional visual and dynamic interpretations of *trajets'* responsive environment existing within a wider network. The mapping of system states reflects the possibility for reconfiguring the activity and relations within a dynamic system and transposing them into another ecosystem, with its own affects and motions, a related but also distinct ethology. These mappings reflect Deleuze's assertion that "individuals enter into composition with one



another to form another individual, *ad infinitum*," bearing in mind that the term individual is not simply the subject but accounts for broadly construed bodies. The alternate visualizations extrapolated from the *trajets* installations are examples of relations compounded to form new "sociabilities and communities" that exist in a "relation of point to counterpoint" (*ibid.*, 628-629).

One of *trajets*' mappings is the paths of the people in the space, shifting in color, and fading to nothing after a while (like footprints on a beach). Another reflects the magnetic forces of attraction and repulsion created between the people and the screens, mediated by both software programs. The invisible relations of electromagnetic fields become visually displayed as an animated real-time graphic. Some of our mapping principles include taking the whole and shrinking it so that it occupies a small space as if viewed from above; taking a part and making a whole of it so that what was partial reveals its holistic nature; rendering an abstract feature into something visually and kinetically tangible; and taking an explicit (or literal) relation and visualizing it in an abstract way.

These strategies echo the dynamics of materialization within ecosystems, like the sky reflecting in the sea or the fractal reproduction of continental coastlines within the cells of our bodies. Witnessing these alternate visualizations yields a visceral recognition of the traces of motion and affect from the body of the installation yet also introduces a sense of disequilibrium. This occurs when we grasp the full implications of how we are seeing-seen, in the words of Merleau-Ponty. The perspective of seeing the whole while knowing one is also a part is a variation on Merleau-Ponty's seeing-seen relation: I see, but am also seen, I see the visual mappings of the *trajets* ecosystem in which I participated, possibly even seeing traces of my own paths within it, but I am also seen by others and perhaps by the system itself. As Merleau-Ponty writes: "Not to see in the outside, as the others see it, the contour of a body one inhabits, but especially to be seen by the outside, to exist within it, to emigrate into it, to be seduced, captivated, alienated by the phantom, so that the seer and the visible reciprocate one another and we no longer know which sees and which is seen" (1968, 139).

The seeing-seen becomes a sensing-sensed, and separating the locus of sensing from that of sensed is no longer meaningful once the worlds are nested and multiple, and I exist synchronously and sequentially across them. A truth of Merleau-Ponty's relation of reversibility is revealed when it is viewed through bodies and ecosystems: it is a networked relation. If "to understand ecosystems ultimately will be to understand networks," then understanding embodied human perception will also be to understand networks (Bernard Patten, cited in Capra 1996, 35).

Moving to the third reason for considering *trajets* an ecosystem, I point out that it has an ability to enact a kinaesthetic transformation upon the states of body and consciousness of those who inhabit it for any length of time. Schwartz reveals a belief relating to the new kinaesthetic of the twentieth century that encapsulates this phenomenon: it was thought that there was a fundamental link between gesture and transformation, that by "going through the motions" one could redefine oneself. This was seen to "the semantics of the new kinaesthetic, as it moved from the expressive to the operative, and from the operative to the transformative" (1992, 95). The main states are relevant to this argument and to *trajets*: expressive, operative, transformative. The expressive layer of the ecosystem are the visuals and overtly behavioral qualities of the screens and people; the operative lends inclusivity to the software, hardware, and algorithmic layer; and transformative is the overall impact. Sometimes. For some people. This is not an argument for a nonpharmaceutical, nonlinguistic cure for what ails people, but it acts as a window into an academic discussion of media art for the often-repeated claim I hear from people, which is that they detect a transformative, meditative, or even therapeutic potential to this sort of work.<sup>15</sup>

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The ecosystemic space created by *trajets* space travels across states that blend into one another, leaving a kinaesthetic sense of the passage of time, of sensual data, of mental and perceptual states and their physiological responses. The simple movement parameters of the screens are rapidly interpreted as behavioral characteristics, imputing personality through movement. A screen's shudder is felt as indecisiveness, a lag or a slow response makes it seem sleepy or unforthcoming, speedy swooping turns make it seem exuberant; peculiarly, the screens seem to be in their own worlds because their responses are individual, but their proximity to the others underpins a sense of the social, just as people are quasi-separate within a community. Without delving into the psychological and physiological mechanics at this time, it is clear that *trajets* creates a space where visitors are relieved of the burden to interpret the meaning of a piece; interaction becomes play or simply the desire to wander through a slowly transforming space. Clear lines or the borders of a body may not be distinguished, but the information is comprehended on a visceral level. Bodies are ever-present but not represented, never sharply defined. Basic elements are redefined: movement becomes patterns of structure and light without losing corporeality. Meaning becomes polymorphous. The state shift offered by an immersive environment is never forced upon visitors but is more of an invitation to experience shifts in perceptual, cognitive, and embodied states. Further, this transformation is consistent with the "changed structure of consciousness" that Merleau-Ponty associates with the "truly creative act" of reflecting upon unreflected experience (1989, x).



*trajets* is not just an ambient and trippy other world. It is a landscape inviting a cognitive as well as a perceptual shift.

While shifts in body states were not prescribed, they seemed to be determined by the amount of time someone was willing to spend in the installation. The standard sixty-second visit had a particular pattern, both spatial and temporal, and even the rhythm of walking was similar. The longer visits were less predictable and often involved people moving very little in front of a particular screen: a sensory feedback loop was generated through which *trajets*' sensing system sensed people while they sensed the screen. My own impression when I stand in front of a screen and read its minute responses is that my own body becomes a sensing surface facing the surface of the screen: I can sense movement through my skin. Visitors to the installation produced a myriad of metaphors for their experiences: for some it was like tai chi, for others it was about fluid architectures. One visitor, thinking he was alone and unobserved in the space, entered into a physical improvisation with the screens, a kind of free-form dance of rolling and spiraling, taking his cues from the swishing of the screens. Later he admitted to being an "amateur" dancer. I found it significant that according to him this meant he was able to do whatever he liked in the space without judgment, as if being a "professional" would limit spontaneous exploration. Again, a key to the experience seems to be immersion: spatial, temporal, and physical. The kinaesthetic and affective transformation of an ecosystem is linked both to its immersive and its responsive qualities.

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Many of the projects discussed in this book distribute the locus of performance across organic and inorganic structures, but *trajets* makes this point particularly clear because bodies move with robotic structures in space, simple structures but inorganic and responsive just the same. The reflections on ethics in the following chapters build upon the realization that it is possible to construct a responsive relationship with our media, and that kinaesthesia is fundamental to the rapport. Despite using Elizabeth Grosz's evocative expression "strange meanderings" as the title for this section on *trajets*, I did not address the essay from which it is drawn in any direct way.<sup>16</sup> I responded to her as if she gave me choreographic instructions for my movement of concepts. On some level I feel as if *trajets* is a do-it-yourself low-tech virtual space in which the body cannot be separated from the mind; as such, these meanderings have incorporated a range of ideas, movements, memories, and desires. That the material meanderings across an expanded corporeality have turned into a poetics of responsivity is, perhaps, strange, but not entirely unexpected.







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Ethics is lived in the sensibility of the embodied exposure to the other.

—SIMON CRITCHLEY, *The Cambridge Companion to Levinas*

214 A phenomenological description of what happens in a motion capture performance from the perspective of the performer can read like a form of animist science fiction. What might seem like a simple process of tracking the limbs of a performer and using this information to drive, in real time, a 3-D computer animation offers up a tangled array of questions, prevarications, and ambiguities trespassing on the domains of ethics, corporeality, and ontology. Ethical questions are shaped around the relation between the self that is performing and the digital other that is an extension of the self but also profoundly different; corporeal questions ask where my body ends and the synthetic digital body begins; and fundamentally philosophical questions concerning the ontological status of the exchange cannot be avoided: what sort of beings are these digital creatures transfigured and conjured out of human movement? And what is my relation to them?<sup>1</sup>

This chapter navigates a phenomenological journey to understand the experience of motion capture and to reveal how the body in performance can act as a catalyst for transforming our understanding of human-computer interaction. I suggest, somewhat counterintuitively, that a human ethics can be developed from human-digital interactions. Ethics is immanent, ethics is embodied, and motion capture performance reveals both dimensions. If thought can be seen as a dance, two moves are executed in this chapter: the discussion reveals and refutes two viewpoints. The first view to be refuted is the idea that the other is outside of me, or that I am a self-contained subject facing the world out there. This is the fundamental subject-object



In this way, Ethics, which is to say, a typology of immanent modes of existence, replaces Morality, which always refers existence to transcendent values.

—GILLES DELEUZE, *Spinoza: Practical Philosophy*

or self-other divide. The second view to be refuted is the suggestion that technologies destroy 215  
 "the vital source of our humanity," and undermine mental, moral, and social domains. This view expressed by Neil Postman is not unlike the one expressed by Paul Virilio and considered in chapter 2. Yet I am not willing to go so far as to suggest that the self is entirely dissolved; nor am I offering the simplistic techno-utopian rebuttal to a techno-apocalyptic view. Through technologies our relations with ourselves shift (our movement, our perceptions, our thought processes) and inevitably our relations with others shift too, creating the conditions for an ethics that is not a prescriptive set of rules, but a value system based on a sensibility toward the other and the wider world.

These reflections are based on performing with motion capture and motion-tracking technologies within the context of several projects spanning a time frame of over ten years. As ever, ideas from Merleau-Ponty are central to the phenomenological accounts of performance in these systems, but attempts to deepen the experiential encounter with otherness foster a transition to Levinas and his philosophical ethics of alterity. Respect for the limitations of a Levinasian approach shifts the investigation further toward Spinoza, or, more specifically, a Deleuzian approach to Spinoza as a way to understand the affective relation between a performer and her motion captured data. Far from being a grab bag of abstract concepts, this journey reveals how philosophical reflection can be a fundamentally practical means for questioning experience, for all reflection is grounded in the moment of lived experience. Each of the computer systems used in the performances



216 and installations in this book offer challenges for understanding human bodies and social embeddedness, making clear that our existing metaphors, structures, and conventional knowledge frequently are not capable of explaining these shifting alchemies of bodies and computers; this is particularly true with the final two chapters, chapter 4 on motion capture (mocap) and chapter 5 on wearable computing. The reasons for this are both technological and humanistic: until recently mocap and wearable computational systems have been difficult for many to access, even within university research contexts, due to their sophistication and cost. This is changing dramatically with the refinement of professional motion capture systems and the proliferation of partial capture and camera-based tracking systems and software. These developments, combined with expansion of smart objects, games, and mobile phones in the consumer market, offer degrees of capture, mobility, and wearability. From a human-centered perspective, the challenges to corporeality and identity are greater with mocap and wearables: the corporeal, philosophical, social, and spiritual implications are more complex as technologies move increasingly close to our bodies and our personal lives.

This chapter on motion capture offers perhaps the clearest indication of performance acting as a catalyst for understanding relations between bodies and technologies in more broadly construed social contexts. The dance studio containing motion capture equipment becomes the lab where experiments are conducted with the possibility that resonances extend beyond its confines.



The premise of this research is that an ethical relationship is fostered implicitly between a live performer's digital data and the performer herself. This premise is expanded to suggest that the relationship between performer and digital data might be extended beyond the realm of interactive arts to shed light on wider social-digital interactions, to reveal and better appreciate the "curvature of intersubjective space" that occurs when we transform parts of ourselves into digital data and communicate with others by means of it.<sup>2</sup> Once we acknowledge that performances with technologies occur in daily life, and that these performances are intercorporeal inasmuch as they involve more than just one's isolated self, we enter into a domain of ethics. In other words, an ethical framework for understanding the relationship between a live performer and his/her motion capture data can be mapped more broadly across wider social-digital interactions. The research lies in unpacking this ethical relationship: Whose ethics? Does this imply a restructuring of the sense of self and other? On what level of awareness does this occur? What are the implications for expanding this ethical relationship beyond the studio or lab? At stake are questions concerning what it means to respond to digital data, of all sorts, not just that arising from movement. This data can be physiological, narrative, intellectual, affective, personal, or fictional.

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Ethics is increasingly evident in practical approaches to the social impact of technologies. Provocatively, technology has been called "a branch of moral philosophy, not of science,"<sup>3</sup> but ethics is not often considered in the context of digital art or performance, almost as if it is assumed that



once technologies are devoted to art, rather than to the expansion of the military-industrial complex, then they are implicitly ethical, almost innocent, in comparison, or devoted exclusively to a critical role. Paul Virilio (2003) and Jean Baudrillard (2000) take a social and political approach to critiquing the increasing technologization of human life; Donna Haraway (1997) and Katherine Hayles (1999) consider the scope for transforming gender, cross-species, and human relations by shifting our approaches to politics and technologies; philosophers of technology such as Bruno Latour (1993) and Don Ihde (2002) restructure our relations with technological objects. Applied ethical approaches inspired by the Anglo-American philosophical tradition and the social sciences used to address the social impact and use of games, search engines and databases, reproductive technologies, and global development have high profiles, but ethical approaches from the continental philosophical traditions toward the more subtle ontological and existential dimensions of humans' engaging with and through technologies are not as easy to find in English-speaking countries.<sup>4</sup> Rosi Braidotti (1994a, 2006) offers a "nomadic ethics" emerging from the belief that moral philosophy is a hindrance to dealing with the ethical complexities we now face. Her Deleuzian approach reveals a profound desire to account for progressive social transformation, or a need for "new schemes of thought and figurations that enable us to account in empowering and positive terms for the changes and transformations currently on the way." Our multiethnic, technologically enhanced societies are "neither simple nor linear events, but rather multi-layered and internally contradictory phenomena" (Braidotti 2006, 31). An ethical approach seems to be a viable alternative to a moral approach in the era of increasing fundamentalism in all cultures; ethics can be more corporeal, less doctrinaire, more ambiguous, more relational. This appeals to some but not to others. Those who want to consider ethical questions but not to be saddled with rules, prescriptions, or laws might be drawn to the approaches provided by Merleau-Ponty, Levinas, and Deleuze, but those who feel the need for a moral code to maintain our social order, protecting it against transgression and disintegration, might find them too open-ended.

The embodied ethical flavor of the phenomenologies in this chapter are further inspired by feminist philosophers such as Luce Irigaray and Rosalyn Diprose. Irigaray insists that the complex and difficult times in which we live call for a revolution in ethics. The ethics she proposes is based on sexual difference, a respect for the embodied lives of the two sexes without one subsuming the other. Rather than just being an ethics of critique, she sees ethics as being generative of thought, art, poetry, and language; in her words it would be "the creation of a new poetics" (1993, 5). Diprose's reading of philosophy and social justice is based on "corporeal generosity," which also



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takes sexual difference into account in order to provide an alternative to "the abstract individualism of ethics, the validity of general moral principles, and the assumed sexual neutrality of moral judgement" (1994, vi). Sexual difference, as it reverberates through Irigaray's writings and her readings of the European philosophical tradition, is not about essentialist arguments around maleness, femaleness, humanness, or nonhuman states; and when sexual difference is taken into the domain of human-computer interaction it is not about attributing a gender to the digital data. It is about corporeality and desire as it occurs between distinct entities. It is about desire across differences, and a need to change the codes, rules, and laws that govern our relations between each other. It is about different constructions of bodies, including the fictional, the fantastical, and the abject. And intimate to the very texture of this book, sexual difference is about giving voice to corporeality, speaking from the immanent spaces of a body or bodies. In this book the body at the heart of the phenomenological descriptions is mostly a woman's, mine, although in this chapter a man's perspective on mocap will be introduced. Sexual difference is the quiet flesh of the ideas in this book—the invisible, the unmarked.<sup>5</sup>



# PERFORMANCE ANIMATION

220 Motion capture is an unfortunate term because it implies that the motion is contained once it is captured, like a bee in a net, but this sophisticated and poetic slice of human-computer interaction is about flow, patterns, and shapes of movement, about the way life can be breathed into that which seemed inanimate. In the case of the games industry, a simple computer animation or avatar is the skin waiting for the spark of movement. In motion capture performance, the figure animated by the movement of the dancer in real time is perceived as having life and agency separate from the dancer. According to Brad deGraf and Emre Yilmaz, both pioneers in using motion capture for computer animation, motion capture "combines the qualities of puppetry, live action, stop motion animation, game intelligence and other forms into an entirely new medium," but even they maintain that it is an unfortunate term (1999, 34). Their objection is that motion capture is only one of three components occurring in a thirtieth of a second (the time of one frame of video) for computer animation to be effective in emulating human movement. Motion capture is the first: it is a sampling of movement from any moving source, echoing the more familiar process of using sampled sound in music composition. The second component is the representation of body parts: applying motion to the various body parts of a character in a 3-D scene. This character does not need to be humanoid; it can be part animal or quite abstract. The third component is rendering: the 3-D scene of the body parts must be rendered into a digital image either in real time or through post-production. Performance animation is the term deGraf and Yilmaz prefer to motion capture because it indicates a sensitivity to the complex layers of the process. Performance animation, they say,

is also digital puppetry. The systems for performance animation (made up of real-time control of three-dimensional computer renderings, fast graphics computers, live motion sampling, and smart software) not only allow for characters to be animated but "allow characters for the first time to have the semblance of a brain." The control of the animations is tempered by what the figures can themselves add to the mix, and while "true intelligence is still a long way off, we are at least at the point of automatic blinking, breathing, hand gestures, locomotion, reflex, intention, etc., and we expect this to be a rich vein of exploration" (*ibid.*, 34-35).

Puppetry is a sister art of performance animation, akin to an alchemical practice, with a long history of transforming wood, cloth, and string into human, animal, or fantastical beings. Writing on the puppet theater in 1811, Heinrich von Kleist reflected upon grace as demonstrated by humans, animals, and marionettes, and he located the soul in the center of gravity. The human dancer did not fare well in the comparison, for grace was seen to exist in greater quantities in puppets and animals due to the obstructive impact the human power of reflection had on the path of the pure flow of movement (Kleist 1983, 184). He drew this conclusion on the basis of two conceptual duets: a comparison of the movement of a dancer with that of a string puppet, followed by an anecdote of a fencing duel between a man and a bear. It is less the suggestion that a dancer is a mere puppet that is of interest than the way observations on the location of the soul are arrived at through the intercorporeal relations, albeit hypothetical, between entities. Predating Charles Darwin's major

writing by approximately fifty years, Kleist exhibits little prejudice based on ontological state of being: a puppet, an animal, a human. The consideration of the relation between the puppeteer and the puppet reflects a conflation of the beings of puppet and human that contains traces of anthropomorphism and animism, and prefigures discourse around cyborgs and prosthetics from the late twentieth century. Kleist writes that the line, or arc, of the center of gravity of the puppet, which is "nothing less than the path of the dancer's soul," can be obtained only by the puppeteer transcending the boundaries of his own skin and extending himself into the stuff of the puppet; it is doubtful whether the soul could be reached "except by the puppeteer transposing himself into the center of gravity of the marionette" (*ibid.*, 180).

222 The approach to ethics that emerges across the phenomenologies in this chapter relies on contentious degrees of anthropomorphism and points to what some might call a form of animism. Anthropomorphism, in the context of responding to motion capture data as if it were another being, needs first to be distinguished from anthropocentrism. The latter is a pernicious elevation of the importance and significance of the human being over the nonhuman world. It is the placing of the human at the center of all structures of value resulting in forms of imperialism, as well as the exploitation of animals, the environment, and anything perceived to be other than human (at times including women and non-Westerners). As a graceless leftover from the colonialist era, it "can be trenchantly criticized on the grounds that it is empirically bankrupt and theoretically disastrous, practically disastrous, logically inconsistent, morally objectionable, and incongruent with a genuinely open approach to experience" (Fox 1990, 18–19). Anthropomorphism is often a side effect of anthropocentrism, but it is not in itself a dualist or hierarchical tendency, and it is not a unitary phenomenon. Generally stated, it is the attribution of human appearance, mental states, or feelings (intention, desire, knowledge, happiness, envy, joy, apathy) to nonhumans, and usually, but not exclusively, to animals. Increasingly we anthropomorphize our devices and tools. Anthropomorphism is "broad and deep everywhere in our thoughts and actions. It colours perception and responses to perception throughout life, as when we speak to our plants, cars, or computers, see a natural disaster as punishment for human misdeeds, or feel that nature shows design" (Guthrie 1997, 53). It is embedded in cultural and social practices that reflect our attitudes toward the other, and these values and practices change over time.

Charles Darwin was one of the most celebrated anthropomorphists. He identified animals exhibiting jealousy, anger, terror, triumph, passions, dejection, affection, pining; he asserted that animals



have powers of imitation, attention, memory, imagination, and reason. Eileen Crist explains how twentieth-century behavioral research criticized Darwin for being anthropomorphic "and thereby in need of correction." His representation of animals has been "greeted with silence" and "regarded as a quaint relic of a past epoch" (Crist 1999, 11-12). Crist's interpretation of Darwin can be drawn into proximity with the reflections on performance animation. Instead of debating whether he was in error or undeserving of attention, she argues that Darwin's "understanding of animal life reflects his view of evolutionary continuity," which sits in opposition to the prevalent dualistic and mechanomorphic view that dismissed animals as if they were nothing but small machines (*ibid.*, 12). It is not surprising that a philosophical approach to human engagement with digital data based on live performance is more inclined toward a continuity rather than a dichotomy between human and animal, because this continuity can be extrapolated across a broader spectrum encompassing human, animal, nonhuman, digital human. Crist expands her argument by indicating that Darwin's premise that "living is experientially meaningful for animals and that their actions are authored" reflects his "perception of subjectivity in the animal world" (*ibid.*). With this move she acknowledges a form of implicit phenomenology on the part of Darwin: his knowledge was based on his perceptions, and he read his information through his own affective, physiological, and intellectual apparatus, which is to say, through his corporeal engagement with the world.

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While Crist never refers specifically to phenomenology in conjunction with her consideration of Darwin's anthropomorphism, Emanuela Spada asserts that that problems with anthropomorphizing are synchronous with suspicions over phenomenology as a methodology (1997, 39). Anthropomorphism acknowledges similarities and differences between human and animal behaviors, and like phenomenology it does so generally through metaphor and subjective description. But there is more to it than simply poetry. The attribution of human characteristics to nonhuman forms, be they animals or Artificial-Life creatures, is a negotiation of value among humans. The identification of human traits and behaviors in something nonhuman both emerges from and in turn shapes social perceptions and interpretations, limiting actions that are conceivable, possible, undesirable, and fundamental. In this way, acts of anthropomorphism contribute to shared ethical codes. They are negotiations of values that change not only how we view others, but also how we as humans perceive ourselves (Caporael and Heyes 1997, 71).

The ethical challenge is that by attributing purpose, will, and causality similar to our own onto an animal, a plant, or a semi-intelligent digital animation (one that may respond to a mover but also

follow its own algorithms), we may not allow it the spontaneity of being unlike us. We may unwittingly not allow it to be divergent, to be other. It is for this reason that Donna Haraway cautions against anthropomorphism and calls it a serious mistake, because the world contains the articulations of nonhumans, of things that are not us (2000, 67). This is perhaps the most important undercurrent in the construction of an ethics based on alterity: to what extent is the other a person like us, and to what extent is she/he/it radically other or different? Freud captures this question in terms of comfort versus discomfort when he indicates that we can breathe freely or feel at home "if the elements have passions that rage as they do in our own soul, if death itself is not something spontaneous but the violent act of an evil Will, if everywhere in nature there are Beings around us of a kind that we know in our own society" (1964, 22). Breathing easily is not always what happens when humans encounter humans, let alone when humans encounter nonhumans; still, Freud makes a good point. Anthropomorphism may make us feel more comfortable, but the context is often one of unease. Haraway's assertion that "it is people who are ethical, not these nonhuman entities" acts to remind those who choose to anthropomorphize that the ethical burden, the unease, remains with them through an imperative of being responsive and responsible to all sorts of complexities, and I would say beings, that emerge from what she calls "technoculture" (2000, 133-134).

Animism can be seen to take us further from home. It is more diffuse and distributed than anthropomorphism; if we define it as the attribution of life, consciousness, or spirit to the nonliving, it takes us beyond the familiar contours of a human form. Instead of seeing a face in the clouds or viewing the trees as having arms, the clouds simply look at us without corresponding to human physiognomy and the trees seem to reach and wave without any reference to bodily extension.<sup>6</sup> One of the strands of Luce Irigaray's critique of Merleau-Ponty is that he posits a sort of animism: "This reversibility is Merleau-Ponty's hypothesis. As if the seen enveloped me in its vision? Isn't this a sort of animism in which the visible becomes another living being?" (1993, 172). Reflecting on Merleau-Ponty reveals one of the strengths of animism: unlike anthropomorphism it is less likely to be a sneaky cover for anthropocentrism, the positing of the human being at the center of meaning and value. He contends, "When we speak of the flesh of the visible, we do not mean to do anthropology, to describe a world covered over with all our own projections leaving aside what it can be under the human mask" (Merleau-Ponty 1968, 136). The indication that there might be something radically other, potentially deeply disturbing to our human sensibilities, is what Merleau-Ponty aims to preserve. Anthropomorphism in its more generous state attributes human intention to the nonhuman and provides the opening for this other to thwart us, for it to escape our control;

animism exists entirely within this opening, even further from our implicit control. Evoking Kleist's metaphor, the being of animism exists at the end of even longer strings than the anthropomorphist puppet. The animist move is subtle, and can be interpreted many ways, but for the purposes of this argument it can be seen as a reverse anthropomorphism: if everything can be seen to be alive and possessing its own being, what is to prevent the worlds of rocks, creatures, spirits, and disembodied forces from projecting their nonanthropomorphic forms and affects onto us, and in so doing, dissolving our human form and human feelings beyond recognition? This is a radical extension of the Merleau-Pontian chiasm according to which I am a subject, but I am also a thing among things. Instead of mapping the body outward onto everything he inserts it into the world of things, or does both according to a double-belongingness: "Its [the body's] double belongingness to the order of the object and to the order of the subject reveals to us quite unexpected relations between the two orders" (Merleau-Ponty 1968, 137).<sup>7</sup>

If performance animation becomes, in some sense, performance animism, one would hope that we are not just mapping a narrow notion of humanity onto our digital creations. Strategic and creative animism can help avoid the dual grasps of anthropocentrism and technocentrism pervading our Western industrial societies.<sup>8</sup> These construct a false duality, because they are not mutually exclusive; paradoxically they coexist and fuel each other.



# EMPATHY, SEDUCTION, CONTROL

226 Two studio experiments with a motion capture system for performance animation were enough to kindle in me an enduring fascination; although these were brief forays into a domain of technologies not generally used for live performance, they generated ethical, corporeal, and ontological questions. These performances revealed the alterity, or otherness, at the root of my dealings with digital data. At a small Amsterdam motion capture studio on a circular platform I was tethered into a professional motion capture system, which tracked and recorded markers on the joints of the body in 3-D space so that movement data could be used as the dynamic infrastructure for visuals, such as avatars.<sup>9</sup> The electromagnetic system used markers on cables that snaked along the limbs and gathered at the small of the back into a small tail that extended four meters to the computer. The data captured from not more than ten points on my body (including feet, hips, sternum, wrists, head) were used to animate a simple geometric figure in real time; it moved as I danced. Each capture point was given a 3-D cube, forming a visual body I affectionately called the "pile of blocks." The pile of blocks moved as I moved, but also exhibited its own quirks, simple ones, but enough for me to have the uncanny sense that it had its own mind, heart, and will. It appeared to be a set of colors and surfaces inhabited by vision, touch, and moments of agency. A tunic-style garment afforded the option to place the foot markers not on my feet but on the edges of the fabric. The fabric swung and twisted as no human legs could but was given life and momentum by the movement of my legs. The pile of blocks was animated partially by markers on limbs and partially by markers on fabric: the figure became whole, stretched across human and textile, entirely convincing

Not to see in the outside, as the others see it, the contour of a body one inhabits, but especially to be seen by the outside, to exist within it, to emigrate into it, to be seduced, captivated, alienated by the phantom.

—MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

as an entity. It was a creature of connective tissue, a new sort of flesh. It moved, it leaped, it spun, showing its 3-D quality, as if bragging that it had volume; it had a back and sides, a top and a bottom. It existed across more dimensions than a flat image, as if "the hidden face of the cube radiates forth somewhere as well as does the face I have under my eyes, and coexists with it" (Merleau-Ponty 1968, 140).

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I entered into a duet with the pile of cubes. My movement gave it life, but it was more than my movement. The pile of cubes had a spark of autonomy: it was cheeky, it experienced pain, indecision, and pathos. I found myself reacting to it as if it were a life form, as if it could see me, a sensation uncannily captured by Merleau-Ponty's words chosen to describe one's coexistence with things in the world: "I who see the cube also belong to the visible, I am visible from elsewhere ... I and the cube are together caught up in one same 'element'"; and this "cohesion" of the seer and the seen, the performer and the digital partner, "prevails over every momentary discordance" (ibid.). When I folded my body into a ball and moved very little, the pile became a confused jumble of blocks. When I stepped too close to the sphere that drove the mocap system by emitting the electromagnetic field, it froze momentarily then seemed to rush to catch up with me, stumbling over itself, exuding vulnerability and joy. Researchers into Artificial-Life situate spontaneity and autonomy, combined with the capacity for self-reproduction, as the essential components of A-Life systems (Boden 1996, 3). It was no accident that the moments with the most dramatic tension between

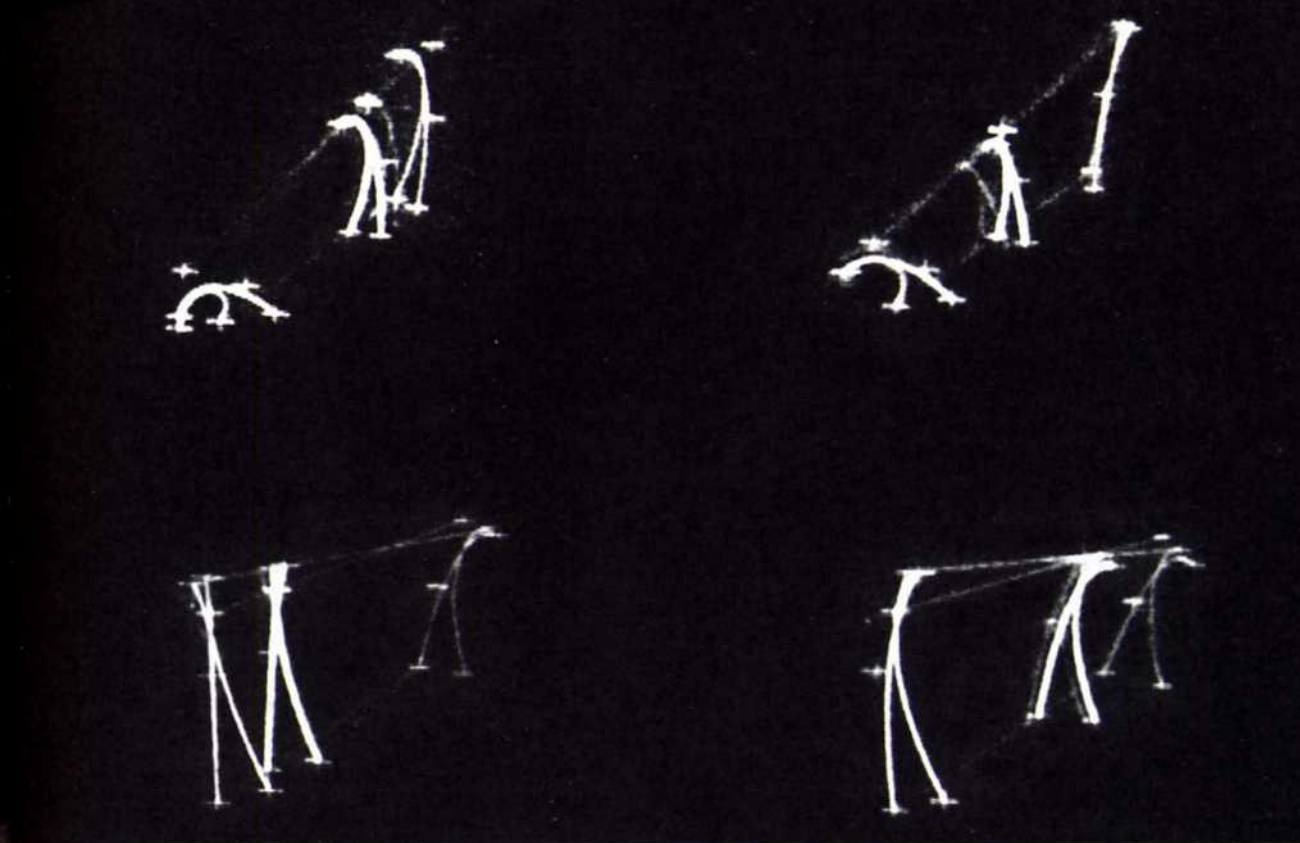


228 performers and captured data were created when the computers malfunctioned slightly, when they lagged, jumped, froze, made the image disappear and reappear, or even when, for inexplicable reasons, they caused the figure to distort or dismember herself. These glitches are consonant with spontaneity and autonomy, with affect and responsivity, with expression and pain. I was caught unaware, for I did not anticipate this strange empathy from the experience of performing in a mocap system. I was unsure what had just begun, like the early stages of a new relationship. I wondered if there was something there, where it might go, when I might meet it again.

The empathic phase with the pile of blocks gave way to the seduction phase with a stick figure. Again a brief improvisation in a system yielded extraordinary kinaesthetic and affective results, this time with unexpected political and ethical overtones. Once more I was wired into an electromagnetic motion capture system, again tethered to the computers, but this time I had more space to move and a larger surface to receive the projected imagery.<sup>10</sup> Dancing with visual movement data projected in real time on a surface adjacent to the performance space is crucial so that the visualized data becomes a partner in the space, next to me, life-sized or more, sharing the movement dynamic. Except this time there were three projected figures, simple stick figures comprising only six markers (feet, wrists, spine, head), effectively four of us performing in the space along with the digital artists Kirk Woolford and Micha Hoch. One figure played a movement sequence I had performed earlier; this prerecorded loop played back, as if the figure existed in a self-contained

FIG. 43 above, motion capture experiment at ZKM, 1998





unchanging state. A second figure was animated by my real-time movement in the space. It did what I did, without a lag, a reasonably faithful representation of my movement, except for its lack of knees, elbows, neck, and face. It was like a comic-book version of myself. The third figure was a brainstorm by the digital artists Hoch and Woolford. They decided to create a simple morph of the other two figures and place it in the middle of them; algorithmically very simple, it was the mean of the movement position and dynamic of the prerecorded figure and the real-time figure. If the arm on the prerecorded looping figure was fully extended and the arm of the real-time figure touched the floor, the arm on the middle figure would be roughly at waist height. Hoch introduced a further algorithm that directed this middle figure to approach, in digital space, whichever of the other two figures was moving the fastest. If the prerecorded figure reached a rapid section of its sequence while the real-time figure was still, the middle figure would perform the mean of the movement, but closer in space to the prerecorded figure.

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The middle figure seemed to be alive. My perceptions of how it moved in space, what pattern its body exhibited, the speed or slowness it adopted, and most of all whether it decided to move closer to the prerecorded figure or to my real time figure, all gave it life. I entered into a duet that was more than creating shapes in space; it was imbued with power, agency, and desire. It was thick with affect. On a visceral level, I wanted the middle figure close to me; I wanted it to "choose" to approximate the real-time figure that I was directly controlling rather than the prerecorded figure

FIG. 44 above, motion capture experiment at ZKM, 1998

that seemed to be doing its own thing. When I slowed my movement and the figure slid away from me toward the other figure I felt loss, and a desire to get it back. This made me want to increase the velocity and size of my movement, like a toddler wanting the attention of her mother. This reaction in me was the primordial phenomenological experience of the pre-reflective. I did not consciously and rationally decide to lure the middle figure back to me. I just wanted it back, driven by a sort of "internal carnal echo" of the corporeality of the figure, which was, strictly speaking, just a thing (Diprose 2002, 103). It became other. It seemed to exhibit its own whims and made its own decisions. In the spirit of Merleau-Ponty's reversible relation by which I see things in the world but am seen by things in the world, it was the object that watched me, that touched me, that moved me. It thwarted me, but occasionally let me bask in its attention. I desired it but could not possess it. There was an incessant escaping and return. It was impossible to see it without it seeming to see me, to direct its movement without it seeming to direct mine. It was always moving, always interrupting me. My position was one of disequilibrium and of transformation. I was alarmed by the strength of my desire to control it, delighted by the experience of swimming in movement with another. I realized that I had entered the domain of ethics.

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The relation of reversibility that Merleau-Ponty sees to be the fundamental dynamic according to which I engage with the world became clear once again in these performative experiences with motion capture.<sup>11</sup> Things are an annex or a prolongation of myself, as he writes, but this does not mean that the thing is known, predictable, or feels identical to me. Hence the "confusion," the being "caught up with things," which are more than just inanimate objects (Merleau-Ponty 1964a, 163). There was never a full correspondence between myself and the pile of blocks or the stick figures. Despite their being direct extensions of my movement, there was no coinciding of the seer with the visible, for the visible figures never entirely converged with me. We borrowed from each other; to use Merleau-Ponty's term, we "encroached" upon each other, but we also gave to each other (1968, 261). From my first improvisation with mocap data I experienced an "open circuit" between my body and the figure. To use the Merleau-Pontian inspired vocabulary of Rosalyn Diprose, the performativity I shared with the digital data was enacted in a "mirror-space of ambiguity, generosity, and intertwining, [where] the spark of sensibility, of perception, of affectivity is lit" (2002, 102).<sup>12</sup>

These were intercorporeal exchanges across beings of differing materiality. Any hierarchy between human and nonhuman was porous and plastic; I emerged from the studio with new ideas regarding my own body, the materiality of digital data, and a shifted ontology by which I mean a shifted

sense of what constitutes a being. It did not matter that the figure did not have life or full agency—I responded to it and perceived it to be that way. I never needed to judge it on the basis of what it was in itself; true to an existential phenomenological approach, I could not access the thing-in-itself but I could access the thing in its reversible relation with me, both of us dynamic, moving things in the world. My choice to view this as an ethical relationship was partly motivated by witnessing my own reactions through a hyper-reflective loop and partly just that: a choice, a political and ethical decision on how to behave.



## FEAR OF CAPTURE

232 When our data seems to perceive and act independently and at a distance from us, the composition and sanctity of the self is invariably called into question. For this reason, motion capture is a technology that makes some people fear for their physical essence and causes others to burn with the possibilities for extending what it means to exist as embodied beings. My reaction seemed to contrast with one expressed by another dancer involved in creative collaboration with digital artists using motion capture. Acting as a phenomenological counterpoint to my phenomenological recollections, and to reveal a different set of cultural attitudes to motion capture, it is useful to consider the *Ghostcatching* installation and the attitudes to motion capture exhibited by dancer and choreographer Bill T. Jones.

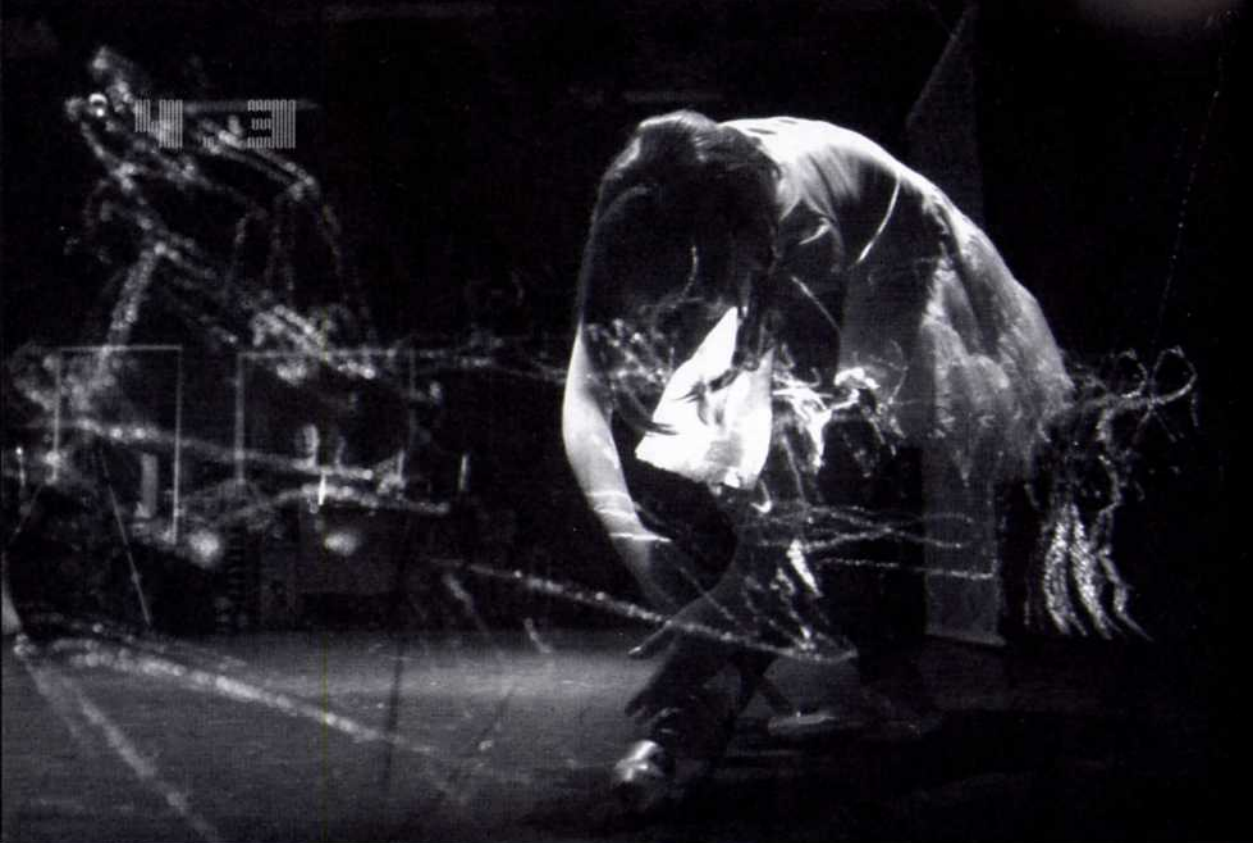
Digital artists Paul Kaiser and Shelley Eshkar of Riverbed collaborated on several celebrated projects in the 1990s that integrated motion capture, animation, and dance. The collaboration with American dancer/choreographer Bill T. Jones was called *Ghostcatching* (1999) and took the form of an installation with video projections of 3-D animations but without the presence of the live dancer.<sup>13</sup> Riverbed used an optical motion capture system for this project that, distinct from the electromagnetic systems described earlier, operates by using infrared cameras to track, in three-dimensional space, points on a moving figure. These points are most often reflective spheres (like small ping-pong balls) attached to the joints on the mover. They don't have to be attached to the joints, but the articulation and range of motion offered by joints make them the most direct and clear way to model human motion.



*Ghostcatching* had a distinct visual aesthetic within the field of animation. It was a video installation of 3-D drawings of a transparent dancing figure that was, unmistakably, Bill T. Jones. Bill's body was transformed into a pattern of blue, red, or green scribbled lines, with the texture of charcoal on paper. He swirled and swooped across the "stage," which appeared as a reflective surface that supported the moving calligraphy as if it were smooth ice. The arcs of Bill's arms and legs were emphasized with lines that materialized like the smoke trail of an airplane. One of the most powerful features of the virtual dance (lasting eight and one-half minutes) was the way figures appeared and disappeared. These figures were all Bill: sometimes they danced with each other, sometimes one left the space by disintegrating line by line as another arrived. For me, viewing the installation, the arrivals and departures were materializations and immaterializations. Commenting on the process, Jones said, "After my motion is captured, the question remains: what entity will next inhabit this motion? Is it a ghost? (It is certainly not me.) Has it taken a piece of me? Or did I spawn it—a life in another world?" (Bunn 1999, 33). His terms evoked the sci-fi gloss of films like *Aliens*, *Invasion of the Bodysnatchers*, or *Matrix*—he talks of "spawning" and being inhabited by other entities. But for me, *Bill* was present. The richness of the colors combined with the powerful sound-score of his speaking, breathing, singing, footsteps, and even shouting made the warmth and idiosyncrasy of his personality reach out through the media.

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FIG. 45 above, *Other Stories*, 2007



234 The Riverbed artists were concerned with the most faithful capture of Bill's movement possible given the state of current motion capture technology. This is a significant point of difference from other artists' performative use of mocap systems. The projects I describe, where the data is used in real time in performance rather than captured and taken into the studio for post-processing prior to being presented to the public, actually benefit from a certain amount of imprecision, indecision, or "swithering."<sup>14</sup> Slight wavering or glitches lend the semblance of autonomy or agency to the data, a sort of kinaesthetic human poetics. Motion capture as a system is robust and flexible enough to be used for a variety of aesthetic choices. Paul Kaiser informed me that tremendous care was taken in deciding exactly where to place the sensors upon Bill's body. The digital representation of movement quality and dimensions of a body can shift dramatically with the slightest change in the position of a sensor. For example, the decision to place a sensor on the inside or the outside of a wrist is nontrivial if the faithful portrayal of an individual's body is indeed the goal. With *Ghostcatching*, the transparent, abstracted drawings still seemed to follow the dimensions of Bill's body and to give it a sort of depth. Riverbed made a deliberate decision to see if they could convey his musculature through a seemingly transparent representation. It is evident that there is more at stake here than simply an abstract animation challenge. As with all of Jones's work, the politics of gender, representation, and the body are present. Lining the walls of the installation were life-sized photographs of the motion capture process, among them one of Bill naked with the glowing sensors attached to his body, including a sensor attached to his penis. This seemed to be more a point

FIG. 46 above, *Other Stories*, 2007





about how digital technologies are not outside the politics of sexuality than it was about obtaining a faithful portrayal of the movement of this part of his anatomy.

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The quality of the lateral movement in the animation was extraordinary. The patterns of Bill's arms, legs, and traversals through space were astonishingly clear. The ghostly drawings seemed to shudder at times as they performed the athletic and ever-changing movements. For some reason the up-down movement was less convincing than the sideways movement. Landings were convincingly weighted but the moments of suspension in the air at the top of jumps seemed strangely stuck. This reflects again how the art of capturing motion might lie in choosing the location of the sensors: after all, what part of our body really conveys the elevation of a jump? Can it be isolated and captured? In contrast with the movement of his arms and legs, the flexibility of his back was lost: Bill sometimes seemed to be dancing with a broomstick for a spine. Moments when his spine flexed and his head turned to occupy a different plane from his torso were remarkable: *Ghostcatching* became breathtaking.

Highly individual movement qualities and even a personality seemed to be directly communicated through the visuals and audio of *Ghostcatching*. This is why I was taken aback by the terms used to describe the project, both by its creators and by certain critics. Despite the sophistication of the project, its rhetoric verged on the techno-apocalyptic. The victor was the moving image; the victim

FIG. 47 above, *Other Stories*, 2007

was the body. Text written on the walls of the Cooper Union gallery as part of the installation set the tone: "So, we may ask: What is human movement in the absence of the body? ... What kind of dance do we conceive in this ghostly place, where enclosures, entanglements, and reflections vie with the will to break free?" Motion capture was referred to as a technology that "extracts" movement from the performer's body. Bill seemed to have an uneasy rapport with the systems used to capture his movement, fearing that somehow his body, or even his "spirit," might be lost. He claimed to relate to the fear expressed by Native Americans who "defy having their likeness captured for fear that their spirit might also be taken."

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It is a paradox that the technology that was responsible for the amazing capture and extension of Bill's movement across media was accused of disembodiment or, worse, the theft of spirit. Perhaps this suspicion greets the advent of any "new" technology. Certainly photography and X-rays were regarded as hijackers of human essence before they became integrated into artistic, medical, critical, and commercial cultures. The critic for New York's *Village Voice* reinforced the divide between image and body when he wrote that Riverbed had "effectively subtracted Jones from his own dance." And that Jones, as a long-time dancer, felt that recording dance with motion capture equipment was a sort of "blasphemy" (Bunn 1999, 33).

Spirit? Bodies? Blasphemy? The questions beneath all this are: Is the virtual necessarily disembodied? And, quite simply, what is a body? Intellectual constructs and ethical premises combine with popular culture to make us assume that the virtual is, by definition, disembodied. It is true that a virtual architectural model of a building or a stage set is not real in the sense that it cannot be stood upon, but real and virtual beings/creations share conceptual, kinaesthetic, intellectual, and visual characteristics. To equate the real with mass and the virtual with all abstract or conceptual qualities is ultimately, and dangerously, dualistic. To deny the abstract qualities of the real building or body, like denying the sensuous qualities of a virtual creation, is to ghettoize both the real and the virtual in definitional constructs that are incomplete. Experience is social as well as sensual, political as well as material, conceptual as well as physical. Virtual environments and dances are not devoid of sense, materiality, and physicality. If the conceptual and social frameworks underpinning them suggest this, then perhaps these frameworks need first to be identified and, second, evaluated to see if they could do with being adapted.

Bill's concern with motion capture based upon his own experiences within the system constitute a valid phenomenological reflection that should not be dismissed. This critique can be placed in the broader context of cultural approaches to the body, with the suggestion that what is being lost or transformed is a conception of the body held apart from images or technologies, a pure notion of corporeality that may not really translate across generations and across bodily practices. Bill spoke of how dancers have a "strange piety" that values the ephemeral moment of performance and sees technological interference as "taboo." I cannot speak for architects, sculptors, or painters, but I know that pieties shift as the world shifts. Younger dancers, or dancers with a more hybridized training (across movement arts, as well as into other art and non-art disciplines), view the moment of engagement between their bodies and their environments differently.<sup>15</sup> What might be a fear of loss for one is a rich opportunity for transformed physicality for another. This was the case with that architectural structure known as the point shoe for ballet dancers beginning over a century ago and is equally true for the imaging technique of the X-ray from the early part of the twentieth century. Commenting on the X-ray, Kevles detects a poetic quality that transcends the two-dimensional and static nature of the images: "Things that had been opaque, like skin, were now transparent, and that had been hidden could now be known. What had seemed like a surface disappeared, and volume stood out as a mist of overlapping layers" (1997, 2). Volume stood out in the X-ray, just as movement, musculature, and a peculiar experience of Jones's presence and personality dances out through the motion capture used for *Ghostcatching*.



## INTERCORPOREALITY

238 The journey in this chapter is to explore approaches to otherness that can adequately explain the uncanny experience of performing with motion capture data, and to shape this into a corporeal ethics. The intention is not to dismiss the field of practical philosophical ethics around reproductive technologies, copyright, representation, and privacy of personal data. The intention is to generate an ethics that accounts for the confusion, the ambiguity, and the transgression of corporeal exchanges with digital others, and to do so by turning to figures in the Continental philosophical tradition, recognizing that no one philosopher exclusively can deliver what we need. This is not a return to a canon or a construction of a new canon; it is a phenomenological encounter between performance and philosophy beginning with a deeper understanding of Merleau-Ponty's intercorporeality, challenging this with Levinas's account of alterity, and then enhancing the scope for affect and motion by looking to Deleuze's interpretation of Spinoza.

Perception, agency, and the construction of notions of selfhood and otherness emerge as my body opens to bodies of others, opens to digital bodies, opens and embraces the possibility for aspects of my own body to be digitized. Merleau-Ponty's ideas are particularly useful to describe a relation of proximity and difference with a kinaesthetic visual entity because his later philosophy is devoted to charting the chiasmic relation we have with the world—the tactile and visual world. I am implicated in an ebbing and flowing relation with the world by means of the porous membrane between interiority and exteriority that is my perceiving body. I am seen like objects in the world are seen,

It is the impact of the other's difference that strikes me, moves me, inspires my carnality, and sets up a resonance in my own corporeal style.

—ROSALYN DIPROSE, *Corporeal Generosity*

I see the objects in the world at the same time that I see my body and other bodies. As Merleau-Ponty says, "My body is at once phenomenal body and objective body" (1968, 136). A direct implication of this reversible relation is the dilution and extension of the designation "my"; the grammatical constructions of "my" and "I" seem to imply ownership of a clearly delimited body, but the dynamic of the chiasmus spreads and bends this so that the proper self is amorphous even if language is structurally constrained. This dimension of lived experience is brought into sharp relief when the body of the performer is split, transformed, multiplied by motion capture systems and visualization techniques. When I encounter my digital self I discover that it is not simply me. The relation between myself and the figure I animate is as chiasmic as the seeing-seen, the touching-touched. It is me, because it is animated by my movement, but it is also other because it is separated from me by the thickness of the space between us and because it moves around and looks back at me—I am the one wearing the motion capture markers, the animation is projected onto a surface next to me, we are the same but we are different in space and in dynamic form. The figure with which I perform is always at the same time both my own body and another body; it manages to be this because of the way I perceive the world dynamically while I am enmeshed within the world. If we follow Merleau-Ponty, perception is more than just the neurophysiological mechanisms by which I apprehend the world. Perception is constitutive of who and what I am, perception is ontological: "It is that the thickness of flesh between the seer and the thing is constitutive for the thing of its visibility as for the seer of his corporeity" (ibid., 135).



240 This reading of Merleau-Ponty yields an ontology of corporeal intersubjectivity, where ontology is understood in phenomenological terms as not just what beings are, but as ways or modes of being; ontology considers how we come to be in a dynamic sense (Moran 2000, 358).<sup>16</sup> Diprose's articulation of ontology as "the realm of the social constitution of identity and difference" is based on Merleau-Ponty's late work and is an important reminder that ontologies are social and are not formulated merely by holding a magnifying glass up to one being as representative of all (2002, 14). Once our proximity with digital technologies is taken to a fine-grained behavioral and existential level, as it is in our current society, a deep questioning into the constitution and unfolding of bodies requires a broadly construed ontology: one that does not falter in the face of the digital data emanating from my and others' movement, physiology, or thought; one that can account for gaps, distances, and discordance. This also involves reconstructing the notion of a being: instead of a self-contained entity or agent, beingness is a changeable, dynamic construct, chiasmically connected to other beings and to the flesh of the world. My very being contains the traces of my bodily encounters with others. The ways I see, touch, and move with others are in my very fabric, memories and histories integrated and transformed. This is predicated upon a "prereflective corporeal openness to otherness" (Diprose 2002, 5). The flow of human movement in social contexts is a mundane example of this sort of openness: either in the dance studio when we put ourselves into a state of receiving and giving movement impulses from other dancers, or on a crowded city sidewalk when we intuitively adjust our speeds and spatial relations to people and things in order to exist in communal dynamic patterns.

FIG. 48 above, contours, 2000





Contributing to the understanding of the relation between self and others in a Merleau-Pontian framework is the psychic phenomenon of syncretic sociability. Each of us retains a sense of the first "me" from early stages in our development of consciousness as children and this self is at first not separated from others; it is "virtual or latent...unaware of itself in its absolute difference" (Merleau-Ponty 1964b, 119). It follows that this virtual self is not constituted in strict opposition to others and to the world.<sup>17</sup> This is a self with soft borders, a porous self that "is unaware of itself and lives as easily in others as it does in itself." This is a sort of syncretism that refers to an "indistinction between me and the other, a confusion at the core of a situation that is common to us both" (ibid., 120). Following this stage of the development of the child's psyche, a corporeal schema is set into place that allows us to be aware that we have a body and that the other too has a body separate from ours, defining us as two human beings. Residual traces of syncretic sociability can either be resisted (in order to erect an impermeable self) or integrated into an understanding of how identity and otherness can be intermingled and spread across all elements in our world, entwining the delight of familiarity with the leap of strangeness that keeps life from skidding across the banal plane of the entirely known or sinking into the threatening forest of the incomprehensibly strange.

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In light of the discussion distinguishing a poetics of interactivity from a poetics of responsivity found in chapter 3, these motion capture performances are clearly located in the domain of responsivity. The intercorporeality of responsivity is even more pronounced in performances where

motion is captured and transformed. The performance of *Contours* (1999-2000) by Mesh Performance Practices brought forth different implications for intercorporeality through duets between dancers and captured, animated beings.<sup>18</sup> Like previous experiments in motion capture described earlier, the movement of the performers in *Contours* was captured and projected into the space as modified visuals, creating a play between self and others; unlike the other projects, simple camera-based computer vision software was used rather than a full motion capture suite, and the socius comprised of two dancers and the array of visualizations animated in real time from their movements. The software for one section of *Contours* created a gentle and fluid environment, inviting a languid and sensual engagement. It was, in the words of more than one audience member, like swimming in light. A differencing algorithm produced the outline of only the parts of the dancers' bodies that moved. This visual representation of physical form mediated by velocity was projected onto the floor next to the performers. Stillness became invisibility: there was no bodily change for the software to track. The floor was like the surface of a pool, with parts of bodies appearing and disappearing according to how quickly they traveled through physical space. There was no possibility for the performer and her image to coincide, but each "borrows from the other, takes from or encroaches upon the other, intersects with the other, is in chiasm with the other" (Merleau-Ponty 1968, 261). This multiplying of the dancing self through projection and feedback, which allowed the image to ripple and cascade in visual echoes, fostered an awareness that the borders of bodies are permeable, and that the visual and kinaesthetic senses entwine. The contour was indeed, as Deleuze says, "like a membrane" through which a double exchange flows (2004, 12). When duets occurred they were across bodies and liquid light, across senses, across corporealities.

What was performed was a version of syncretic sociability by which the dancer was transposed into digital others in space. It is not that I lost all distinction between myself and the images while dancing, but that I did not need to exist within conscious distinctions of that sort: I was able to flow in a pre-reflective state where syncretism existed across materialities. What became clear was that the system included my visual body, my immanent body, and the other, and it operated not according to a clear two-way correspondence but with gaps, imperfectly, across the indistinction of the several elements. *Contours* revealed that the composition of the element "other" can be diverse, and that it is not a static category. In this case, otherness was a choreography with my body's projected image, but also with the digital artist (Kirk Woolford) who shifted the parameters of the visual image in real time by using the keyboard in front of the computer, with the other live dancer (Ruth Gibson or Sarah Lloyd) in the space when she joined me, and with her digital images.



The phenomenological account of this performance epitomizes what Diprose calls the “ambiguity of intercorporeality” that occurs through syncretic sociability.

Nearing the end of *Contours*, I was drawn upward in a harness, suspended within a circular structure, above the audience’s eyes as if above the surface of a pool. The projections were directed at my body; the software generated an aggressively searching grid. Instead of swimming, I felt as if I were drowning when I performed this section. The three-dimensionality of my body was flattened by the two-dimensionality of the projected grid as it bent and twisted around me and spilled onto the circular screen. The software performed the basic surveillance tasks of identifying what moved (a hand, a head, a foot) and sending the image onto that identical spot, but the movement dialogue was one of evasion rather than entrapment. Until I found my place within that system, until I learned how to inhabit it through movement initiation and response, it seemed to take over the entire surface of my body in a nonspecific yet frenetic way. I was experiencing part of the ambiguity of intercorporeality, the discomfort, in that I was caught within the being of the other, which was carving and swallowing me up, objectifying me. I became acutely aware of being the seen to the seeing, the surveilling eyes of the camera and the software. Making myself experience the seeing-seen relationship integral to Merleau-Ponty’s understanding of how we live in the world required a volitional act of regaining the position of seer, and from that vantage point I could complete the missing second half of the reversible relation by seeing my own body, and by seeing and somehow palpating the software as it tracked my body. To use a more obvious sociopolitical term, it was all about control. Controlling the grid in *Contours* came about through developing a new relationship with my own body—for I was the interface to an unknown system. But in order for this to be a compelling performance and a play of intercorporeality, the control had to be established so that it could in turn be relinquished. This chiasmic dynamic of control and relinquishing control is fundamental to an ontology of corporeal intersubjectivity.

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The phenomenological experience of performing with motion capture data relies on a strong, practical sense of intercorporeality, but it requires an equally strong personal and philosophical understanding of otherness. Once we acknowledge that our self-identity arises in conjunction with the corporeality of others, the question to be raised is whether Merleau-Ponty can account adequately for otherness either in a social situation or in the experience of performing with mocap data. Alterity (the state of being different, diverse, or other) is a topic of fierce debate in Merleau-Ponty’s thought, circling around the basic question of whether the relation of reversibility can really allow



for otherness.<sup>19</sup> In a truly unfortunate passage that seems to dissolve the other into the self, Merleau-Ponty writes that he who grasps the colors, sounds, and textures of the world "feels himself emerge from them by a sort of coiling up or redoubling, fundamentally homogeneous with them." And although at the end of the passage Merleau-Ponty refers to differentiation between individuals, he seems to stumble in the dance between self and other and reinstate the supremacy of the self: "The sensible is in his eyes as it were his double or an extension of his own flesh" (1968, 114). In this light, critics of Merleau-Ponty ask whether there is scope for loss, transgression, and disequilibrium if the chiasmic relation through which we encounter the world is a symmetrical one.

Evaluating the ability of Merleau-Ponty's thought to accommodate difference can be approached by reflecting once more upon a pervasive, intimate, and explosive locus of difference: sexual difference. Luce Irigaray is one of the most influential philosophers of sexual difference for good reason: her writing combines philosophical rigor with poetic beauty as she challenges the ability of language to convey what is important to life: ideas, eros, embodiment, poetry, love, the elements. She sees in Merleau-Ponty's "rigorous and luxuriant" writing a labyrinthine solipsism that privileges the subject and the visible over the other and touch. The question she raises regarding reversibility and intercorporeality is that of the other, particularly of "an other whose body's ontological status would differ from my own"—in other words, the other of sexual difference (Irigaray 1993, 157). Her objection to the philosophical physics of the two hands is that neither my hand nor the world is reversible; they are not "gloves." They have their roots and their atmospheres, and "to reverse them thus, the one in the other, would amount to destroying them in their own lives" (*ibid.*, 160). Here the ethical, social, and political enters her critique with the implicit recognition that difference is contextual and lives are not identical. No singular person shares another's history, sexuality, and race. No one or thing is reversible. In short, Irigaray is concerned that reversibility is the same as substitutability, causing the subject to be mapped outward like a rippling solipsism, and that vision dominates touch. "Flesh, the flesh of each one, is not substitutable for the other" (*ibid.*, 167).

There is no doubt Merleau-Ponty strives for a beauty in our relations with the world and with others. The sensual poetry of his writing is his strength and his weakness: it is possible to argue that he errs on the side of beauty. This is most evident in his reflections upon art and otherness. His most poignant descriptions of the other skip over the basic relation with the stranger on the street and evoke the magic and sensuality of the other who is my lover: "The body is lost outside of the world and its goals, fascinated by the unique occupation of floating in Being with another life, of making

itself the outside of its inside and the inside of its outside. And henceforth movement, touch, vision, applying themselves to the other and to themselves, return toward their source and, in the patient and silent labor of desire, begin the paradox of expression" (Merleau-Ponty 1968, 144). Despite his animist streak (when the landscape looks at the painter and colors vibrate and express of their own accord) there is little direct sense that the other could be a human being one dislikes, let alone an animal or a digital being. In the following chapter on wearables an argument will be made for the abject body, and moments of discord and disequilibrium from Merleau-Ponty's thought will be emphasized, but for this discussion of alterity the question to be asked is whether his latent animism is one of lovers and sun-dappled landscapes, omitting a wide swath of human relations and affective states.

An ontology of corporeal intersubjectivity, as derived from and in turn applied to motion capture performance, is not about doubling, not about creating a replacement of one for another for the simple reason that we do not want to remain trapped within an endless cycle of exchange, or even play, without scope for transformation. The question becomes whether motion capture and other digitally mediated exchanges draw us into "an affective and transformative dimension of intercorporeality" (Diprose 2002, 9), or whether they let us swim in a sensual digital pool of reciprocity. I delight in Merleau-Ponty's consideration of the other, and struggle to hold onto moments in his thought where I can truly read otherness in the chiasmic relation with the world, but when I really need to understand myself confronted with the strangeness of the digital rendering of my movement and I stumble over the unexpected and the sheer-not-me-ness of what I expected to be me, I need a more elaborated understanding of otherness, one that places me even further into unknown territory, one that is out of balance and asymmetrical, offering a "topos or locus of the irreversible" (Irigaray 1993, 153). I look to Levinas to push the limits of alterity, but at the same time I am wary that if the other is construed as radically other, he, she, or it might be so very different, so alien to me, that perhaps I cannot enter into a meaningful exchange.

## PERFORMING ALTERITY

246 This section on performing alterity is not about interrogating the nature and essence of the digital other. Instead, visceral and affective responses to the other are taken to be the basis of a performative enactment of ethics. In order to sustain performance improvisation, I cannot unilaterally control the figure, drive it, or simply impose my narrow and finite will upon it. If I attempt to impose my will on the figure the performative exchange becomes profoundly uninteresting, I lose sense of direction and purpose, and the figure seems lifeless. Ethics resides in my response to the other and gives meaning and social integrity to my motions. Hence, a performative approach to alterity reinforces the validity of Merleau-Ponty's claim that "I borrow myself from others; I create others from my own thoughts. This is no failure to perceive others; it is the perception of others" (1964c, 159). Although it resonates with the experience of responsive performance, this is the basis of Levinas's critique of Merleau-Ponty: that corporeal intersubjectivity amounts to a unity of thought that subsumes the other and eliminates difference. For Levinas the problem is precisely that I create the others through "comprehending" them, as if I trap others in my personal thought bubble. Levinas's rigorous and sensitive account of alterity challenges and deepens some Merleau-Pontian perspectives on self and otherness and helps elaborate a performative ethics. In this section phenomenological descriptions from a performance called *immanence* (2005) are read through Levinas, who maintains that the ethical relation is a "performative doing," that ethics is "an expressive position of myself facing the other" reflecting my inability to control or contain the other. A Levinasian approach to alterity reminds us that "the ethical relation takes place at the level of sensibility, not at the level of consciousness" (Critchley 2002, 21).



The relationship with alterity... is infinitely remote, is, paradoxically enough, the most extreme immediacy, proximity closer than presence, obsessive contact.

—ALPHONSO LINGIS, "Translator's Introduction," in *Otherwise than Being or Beyond Essence*

Through Levinas it is possible to gain a deeper sense of alterity, to challenge the symmetry of reversibility with an asymmetric and irreversible relation between self and other, and to appreciate the need for an experience to remain in part, quite simply, beyond comprehension or outside knowledge. The role for performance in shaping a new ethical approach to technologies can be given new significance if ethics is seen to be an expressive position of myself facing another that may elude words, one that operates on a kinaesthetic and pre-reflective level.<sup>20</sup> Paradoxically, through Levinas it is possible both to problematize the construction of an ethical schema based on the encounter between self and other mediated through motion capture, and to lend additional vibrancy to the phenomenological description of such an encounter.

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Martin Heidegger's discussion of *techne* quite unexpectedly helps with understanding the ethical dimensions of responsivity by linking response with responsibility, and it facilitates a transition to a consideration of ethics informed by Levinas's approach to alterity. Heidegger writes that "the principal characteristic of being responsible is this starting something on its way into arrival" (1977, 9). Once *techne* is defined as an act of revealing what was concealed—in other words, of bringing-forth into the world—technologies can be situated within this broader context of knowledge and revealing that is *techne*. Heidegger arrives at this conclusion by first rejecting the merely instrumental definition of technology and reworking of the notion of causality so that it is not reduced to a deterministic relation between cause and effect. When causation is seen to be responsible for



248 bringing something into being, responsibility and revealing are linked, and responsibility occupies the broad and fertile ground of creative activity. In a simple sense, something that is not yet present makes its arrival through a dynamic of responsibility, or, I add, responsivity.<sup>21</sup>

It is no accident that the published lecture in which Heidegger presents this argument is called *The Question Concerning Technology*. He ask us a question and we are expected to respond. Our response need not be articulated; it is enough that it is a process of thought, or a way of thinking. The relation of responsibility that Heidegger sets up between himself and the original group who listened to him in 1955, and, subsequently, those who read the published words, is an exchange between self and others that invites us to bring something into being: a new way of thinking. This is intensified by the matter he asks us to address: technology. As he puts it, technology itself “makes the demand on us to think in another way” (ibid., 30). We are asked to respond, and to respond differently. While Heidegger does not explicitly refer to the other, I take it that we are asked to respond by an other, or to use Levinas’s term, by a source of alterity.

For Levinas the deep structure of subjective experience unfolds by means of a relation of responsibility or, better, responsivity to the other. Consistent with much of the discussion of this chapter, he regards ethics as occurring through embodied exposure to the other (Critchley 2002a, 21), but inconsistent with a Merleau-Pontian approach is a tension between symmetrical and asymmetrical

FIG. 51 above, *immanence*, 2005



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views of our responsive relation with the other. This can be focused on the role of gift or remainder in the chiasmic exchange. If the relation of reversibility or chiasmic exchange at the basis of Merleau-Ponty's phenomenology of intercorporeality is seen to occur without excess or loss, without gift or remainder, then there is a huge problem from a Levinasian point of view. The other can never be fully mapped, predicted, or exchanged. In contrast with the celebrated two-way exchange epitomized in Merleau-Ponty by the one hand touching the other, Levinas indicates that otherness can only be supported by irreversibility, by a one-directional offering that approximates a gift, for which there is no anticipation of return. By being a moment of excess that cannot be integrated into a predictable and measured relation of exchange, the gift occurs, in Levinas's words, outside of knowledge, "otherwise than being," and can open space for something entirely new or unexpected.

Interpretation is elastic and it is possible to overexaggerate the differences between Merleau-Ponty and Levinas. Merleau-Ponty's chiasmic relation, despite being called reversibility, is not a synonym for substitutability or replaceability. There is always the moment of ambiguity, of disequilibrium at the heart of the motion; this is the drawing of strangeness into the relation of the self with the self, like the way my hand never succeeds in grasping the other or Merleau-Ponty's example of twins who share the same flesh but are definitively absent from one another, living a distance that, at the same time, is a strange proximity (Merleau-Ponty 1964c, 15). Levinas and Merleau-Ponty are not so very far apart with their concerns, despite different vocabulary, and Deleuze captures the structure

FIG. 52 above, *immanence*, 2005





250 of the gift in his appropriately titled book *Difference and Repetition* (1994). He writes: "Reflections, echoes, doubles and souls do not belong to the domain of resemblance or equivalence; and it is no more possible to exchange one's soul than it is to substitute real twins for one another. If exchange is the criterion of generality, theft and gift are those of repetition" (Deleuze 1994, 1). Theft and gift represent loss and excess; they are remainders with no place in symmetrical relationships. The idea of twins is useful because intuitively we know what we cannot say: first, we cannot pretend that our twin does not exist; second, we cannot say that she is the same as me and that we can be substituted one for another; third, we cannot say that the twin is such a strange creature that she is entirely alien to us. The same is true of the motion captured figure: it exists, it is not exactly the same as me, but it is also not irrevocably different from me, and, in a broader sense, we cannot pretend that the digitization of our bodies and social relations is going to evaporate or even diminish. Like it or not, we have digital twins.

*immanence*, a promenade-style performance, was structured around four responsive systems, each in their own "node" or area, in the performance space. One was a Vicon optical motion capture system used in real time through which the live movements of an actor animated abstracted 3-D graphics. Another used medical imagery and gave the impression of a dancer swimming in her brain and heart. A third had a dancer engaging with her digitally manipulated real-time video feed, and the fourth was the basic configuration where collective movement shaped musical composition and visuals.<sup>22</sup>

FIG. 53 above, *immanence*, 2005



The motivation for this project was not to use technology just for the cutting-edge cachet, but to explore in greater depth the qualities of internality and externality that could be achieved through practices of movement, attention, and perception in conjunction with computational systems. The inspiration for *immanence* were those labyrinthine processes of contemplation used to obtain a sense of internality that applies to yoga, meditation, and philosophy, and Deleuze's thought of immanence and the virtual.

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The term virtual has come to refer all too exclusively to the digital representation of life, structures, or 3-D worlds, or to data that has had its material structure altered (from words and numbers on paper to zeros and ones in cyberspace). This performance attempted to embody an alternate notion of the virtual: Deleuze's suggestion that a life is made up of virtualities, events, singularities, that the virtual is "not something that lacks reality but something that is engaged in a process of actualization" (2001, 31). In some respects, this was very practically manifested through dancers and images, but in phenomenological terms *immanence* pushed the limits of sensation, opening the scope of movement exploration so that the choreographic elements included internal impulses, kinaesthetic reactions, digital interventions, virtual singularities, and the shifting terrain across materialities where the familiar and preexisting melted into something indefinite and undefined. Too often the phenomenological approach is seen to be stuck within the confines of a sensory subject in an external landscape, but on this occasion landscape gave way to topography, internal and

FIG. 54 above, *immanence*, 2005



252 external, actual and potential. *immanence* and the phenomenology to come out of it did not have as a goal simple self-reference, but attempted "to introduce difference into the very idea of sensation" (Racjman 2002, 16).<sup>23</sup>

I inhabited the node in the performance space where projections of my movement were modified in real time by visual artist Jamie Griffiths and then returned to my side, visible on a floating projection surface.<sup>24</sup> The only way I could perform in this configuration without falling into rote and spectacle was by wholly responding to the sensory stimulus around me. This improvised performance cycle happened across a range of temporalities: sometimes very quickly, almost simultaneous to the images generated, sometimes with delay. The temporality of the visual transformations, which occasionally incorporated short buffered loops and a lagged duplication of my image, echoed a comment by Levinas on the differing of the identical self through temporality and phasing: "In the temporalization of time the light comes about by the instant falling out of phase with itself—which is the temporal flow, the differing of the identical" (Levinas 2002, 9). Plays across temporality are further manifested in performance and in life not only when lags are integrated into movement, but when anticipation becomes palpable. A thought, gesture, or full-body movement that has not yet occurred but is about to materialize has its precursors, and these can be sensed as though they were a pre-touch, or virtual force. In this way I live across temporalities as I respond to virtualities in the moment of movement. Both the lagged past and the ill-defined future are filtered through

FIG. 55 above, *immanence*, 2005





my attitude of responsivity, catching me up in a swirl of feedback and feedforward.<sup>25</sup> As Levinas says, the instant falls out of phase, but I too fall out of phase with myself, revealing the remainder or the gift inherent to this movement dialogue. The reversibility of this movement was never a self-identical mapping, never exactly in sync or coinciding with expectations. Of course I had developed an implicit narrative throughout the devising process for *immanence*, which lasted a number of months, but once in the system I let the movement occur through listening, feeling, and receiving, prior to acting or at the same time as acting. Levinas's description of skin that touches depicts the improvisation process with uncanny vividness: "Movements of hands and fingers that explore, of a head that changes points of view, and of hearing; movements of contraction and decontraction of the eye muscles. These muscular acts and these perceptive acts are 'mixed,' tied to the exploratory activity of a skin that touches" (Levinas 1990, 61). The immanence was virtual inasmuch as it was both deeply internal but at the same time still about to occur.

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Repeated encounters with otherness, and the unsettling unpredictability of these encounters, are always latent in the experience of performing with responsive technologies. A peculiar relation with alterity occurred in one particular section of *immanence* as my body became flesh, or meat. My movement was transfigured into visuals with the uncanny look and feel of a live Francis Bacon painting. My face and limbs seemed to be stripped of the outer layer of skin, appearing like raw meat, with moments where eye sockets, ribs, teeth, or fingers were clearly visible prior to dissolving

FIG. 56 above, *immanence*, 2005

anew into a visceral smearing. There was a feeling of having been played, but also a tremendous life force or power to this state of a body turned inside out (which was no longer just my body). Levinas's description of the encounter with the face of the other was challenged: the image presented itself to me as an other denuding itself of its skin, sensibility on the surface of the skin, at the edge of the nerves, offering itself even in suffering" (2002, 15), but the face-to-face relation between myself and the image was not distant and respectable; the other was grotesque, distorted flesh, and I echoed this, feeling my own self transformed into moving meat. Writing on Bacon, Deleuze identified in the paintings what I felt in my body, an "intense movement" flowing through my body and the body of the digital other, "a deformed and deforming movement that at every moment transfers the real image onto the body in order to constitute the figure" (2004, 19). Bacon dismantles the face in his paintings: the body escapes through the mouth, the flesh descends, the teeth are little bones in heads that are "wiped, scrubbed or rubbed." There were no faces in any of the visuals in *immanence*, but in the heads there were perhaps "insinuations of faces," to return to Levinas for a moment (1990, 66). There was meat in the purples, reds, and oranges. There were "zones of indiscernibility or undecidability between man and animal" (Deleuze 2004, 21), between self and other, between human and nonhuman. Despite knowing that my movement contributed to and provided the movement narrative for the raw visual effects in *immanence*, they were the impetus for my emotional and physical shifts through space—I was compelled to respond or to be evicted from the intimate flow into a position of outsider to my own actions.

The use of the extreme visceral philosophy of Deleuze juxtaposed with Levinas allows me to do something else that has been implicit throughout the consideration of *immanence*, which is to use flesh and meat to overcome the implicit duality between immanence and transcendence. Calling this performance *immanence* and asking three women to dance in it can't help but evoke the feminist philosophical critique of the position of women and their bodies as immanent to centuries of philosophical thought that associate men and philosophical thought with transcendent. As Iris Young succinctly put it, "Women in male-dominated society struggl[e] to live out free transcendent subjectivity within the requirements of immanence and objectification" (1998b, 287). The obvious question is whether I am celebrating the immanent side of the duality as a way of correcting the balance. I would have to say no, for the reason that this would preserve the duality and also hold onto a standard notion of transcendent subjectivity. Young's identification (after Simone de Beauvoir) of contradictory modalities such as "ambiguous transcendence, and discontinuous unity" is a partial move to escape the old structures by fragmenting and reassembling them. But Deleuze and



Levinas take us further. When immanence is a state of potentiality rather than simply an internal state, when the distinction between the performing self and the visual virtual other is swallowed up by a shared corporeal ebb and flow, immanence no longer needs to be twinned with transcendence in order to have a corporeal and ethical validity.

We need not look to the extreme interpretations of raw, skinless meat in order to emphasize the otherness in the relation of self to the world. Levinas's objection to Merleau-Ponty seems to be that true otherness cannot be obtained if the "unity" of a body is at its basis (1990, 63), but the human body is never homogeneous, never entirely known, and the topography of the human body is interwoven with strangeness. This is not just the sense of never really knowing what the small of our back looks like, of not knowing the shape, texture, or size of our liver, or how our skeletal structure manages to hold us upright, or what malignancies may be lurking deep within. On a daily basis we live with faith, and more than a little surprise, that when we get out of bed in the morning the puppet that we are manages to string itself together once again; we need only look to the dancer's perspective to question rather than reinforce the assumption of unity in a body. A passage written by dance historian Susan Foster on the slippages inherent in a dancer's control over her own body stays with me, and makes me want to ease Levinas's mind when he worries that the right hand might know the left hand too well in order to account for alterity. Dance illustrates how our bodies exist through formlessness, either that of pain and injury or that of vigor and physical exhilaration, and frequently both entwined. Foster's account of the dancer's relation to her own body conveys the entwinement of mastery and disintegration, dispelling the myth that the dancer is in full control of her body. Formlessness is the lining of the dancer's form, as the invisible lines the visible. Foster writes:

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Typically, a dancer spends anywhere from two to six hours per day, six to seven days per week for eight to ten years creating a dancing body. During the course of this travail, the body seems constantly to elude one's efforts to direct it. The dancer pursues a certain technique for reforming the body, and the body seems to conform to the instructions given. Yet suddenly, inexplicably, it diverges from expectations, reveals new dimensions and mutely declares its unwillingness or inability to execute commands. Brief moments of "mastery of the body" or of "feeling at one with the body" occur, producing a kind of ecstasy that motivates the dancer to continue. Clear sensations of improvement or progress—the result of a momentary matching of one's knowledge and awareness of the body with a developing physical capacity—also provide encouragement. The prevailing experience, however, is one of loss, of failing to



**regulate a miragelike substance. Dancers constantly apprehend the discrepancy between what they want to do and what they can do. Even after attaining official membership into the profession, one never has confidence in the body's reliability. The struggle continues to develop and maintain the body in response to new choreographic projects and the devastating evidence of aging. (1992, 482)**

Philosophically, it is controversial to draw upon Levinas's ideas of alterity to explore a relation that is not strictly human-human, but one that is distributed across layers of the human and nonhuman, the human and digital. Critchley has indicated that "it remains a moot point to what extent, if any, Levinasian ethics is capable of being extended to non-human beings" (2002a, 16). Even philosophers looking to build arguments around animal rights have disputed Levinas's humanocentrism, so how can I apply these ideas without reservation to human-computer interactions?<sup>26</sup> Yes, on the basis of performance in motion capture systems I identify otherness within myself, and otherness in my responsive relation with the data with which I dance. Merleau-Ponty's ideas resonate with me both experientially and conceptually and Levinas's rigorous sense of alterity gives more depth to the translation of my pre-reflective, affective, and kinaesthetic experiences into thought. But, in the end, I am forced to admit that the data is not, strictly speaking, another person. I know this, despite nurturing the ambiguity within myself on the basis of an ethical sensibility. The residue to which Levinas refers as the excess of the gift is tied, also, to suffering. To pain. To solitude and abandonment. The other falls to my responsibility, eluding possession, in fear for him or her, and in love (Levinas 1990, 65-66). For all my human reactions to the digital data... can I honestly say that I love it? That I fear for it or am frightened of it, feeling that I might do it ultimate harm or that it might endanger me? No. My affective and kinaesthetic responses may fall within a range of considerable ambiguity and poignancy, but they exclude the extremes. Visually and metaphorically there may be a sense of death and ecstasy, but phenomenologically, in performance I have not experienced these states.

For Levinas, the ethical relation to the other is one of infinity; the other is not the same level as you or me but is higher. Practically, this means that the other can disrupt us, for someone or something that is beneath us or equal to us cannot disrupt our flow, our attitudes, or our thinking in the way that something above us can. When I suggest considering a Levinasian framework for our engagement with data derived from other bodies or from my own body, I am not implying that the digital is superior to the human, only that the human who uses a system is not the master, the controller, or ultimate ego at the helm of the exchange. The ego wants to reduce the other to the self (to the

same), but the ethics of alterity prevents this from happening by preserving the status of otherness. There remains a dimension of the other that is closed to me, secret, or inaccessible to my gaze or my probing. In arguing for this sensibility in our engagement within responsive systems, I am also preserving a set of qualities often eradicated from computational environments: the invisible and the interior, or immanent, qualities of a rapport, to use the word from which the title of the performance immanence was drawn. Words written by Levinas in 1974, with no explicit reference to digital media or deliberate foreshadowing of our need to understand the ethical and social implications of a culture increasingly dependent upon computerized devices and mediation of human engagements, uncannily encapsulate the view of those of us who feel that we do not leave our bodies or our humanity behind when we use computers: "As a substitution of one for another, as me, a man, I am not a transubstantiation, a changing from one substance into another, I do not shut myself up in a new identity, I do not rest in a new avatar" (Levinas 2002, 14).

Even if my identity is broken up, and my being is changed into signification, Levinas maintains that I remain susceptible, vulnerable, and sensible (*ibid.*). It is not necessary for the data to be proven to feel pain or suffering. It is not necessary for the performer to experience pain in her moment of engagement with the data—this is not the goal. It is enough that she has traces of pain in her flesh, has empathized with others in pain, or may feel pain once again.

AFFECT,  
MOTION, ETHICS

258 *figments* was a motion capture installation by Mesh Performance Practices for which the capture system was neither optical nor magnetic, but ultrasonic.<sup>27</sup> It was a partial hack, stitching together two ultrasonic tracking systems. The images were projected in real time onto a large hanging screen in the front room of a Victorian house that acted as a performance space, but also onto small liquid crystal display (LCD) screens suspended at head height, and to a head-mounted display worn by the performer.<sup>28</sup> One performer at a time was wired to a computer, although there would generally be two performers improvising in the space at a time. The system worked by creating a feedback loop between four small speakers suspended in the room emitting ultrasonic clicks (inaudible to the human ear) and small microphones worn by the performer. Taped to the performer's limbs and head, each microphone was attached to a cable that trailed along her body to be gathered into an "umbilical cord" connecting her with the computer. These microphones picked up the clicks and transferred this audio information to the computer, which then translated it into a visual map of the position of the microphones in space. Once wearing the motion capture "suit," which was more like a tangle of cables, the performer effectively puppeteered an abstracted image of the human form in real time. The do-it-yourself nature of the system—nonstandard, ultrasonic, stitched-together, and running on simple PCs—meant that the graphics had to be extremely minimal line drawings to not tax the CPUs with data for real-time updating.



Of frozen catatonias and accelerated movements, unformed elements, nonsubjectified affects.

—GILLES DELEUZE, *Spinoza: Practical Philosophy*

Two elements of this performance-animation experiment take this philosophical discussion into different areas. First, this system worked by means of *sound* and not images because microphones were the source of capture instead of cameras. And second, its *instability* surpassed that of the other experiments discussed in this chapter. The impact of these elements was to challenge corporeality and responsivity to their points of breakdown. Corporeality, even the fluid and chiasmic construction offered by Merleau-Ponty, or the one permeated by the infinity of the other rather than totality of the same offered by Levinas, could not fully account for the dissolution of the bodies in this movement exchange, or for their "remembering" in the dual sense of unearthing memories and assembling the parts of the body anew. Deleuze's sense of the body as forces, particles, and planes gained a relevance that before had only been oblique, particularly his interpretation of Spinoza's ethics. Here is an ethics based on affect and motion, on speeds and slownesses. Some of the most abstract, conceptual dimensions of his reading of Spinoza were given flesh by the phenomenologies derived from performing in *figments*. "Concretely," writes Deleuze, "if you define bodies and thoughts as capacities for affecting and being affected, many things change. You will define an animal, or a human being, not by its form, its organs, and its functions, and not as a subject either; you will define it by the affects of which it is capable" (1988, 124). The equivocations over whether or not to construe the digital data as a being, a body, or a subject were put to rest. Yes it is a being, yes it is a body, no it is not a subject because subjectivity is no longer a category of interest.



260 With this unusual motion capture system, the dancer inserted herself into digital space by means of movement translated into sound, and sound into visuals.<sup>29</sup> The system operated by capturing the invisible: fluctuations in sound waves. Analogous to Deleuze's characterization of music, capturing movement depended on "a complex relation between speeds and slownesses of sound particles" (ibid., 123). The dancer's movement dialogue with the digital figure, in her head-mounted display and on the screen, was shaped not only by the clean lines of her moving body also by unexpected and invisible sound interferences caused by disturbed air currents, other bodies moving through the room, shifts in volume of ultrasonic emissions, and the bounce of the sound waves off the hard floors. She was never alone in the space; she was always among others. Once more, Deleuze's interpretation of bodies in the world according to Spinoza seems to be speaking from the position of the dancer in the ultrasonic mocap system: "One never commences; one never has a tabula rasa; one slips in, enters in the middle; one takes up or lays down rhythms" (1988, 123).

Someone who witnessed our experiments spoke of a blind friend who identified the people he knew according to how they marked an absence of sound in the environment containing them. The body of the person absorbed sound, creating an absence. This absence had a form that became their physical identity for him. Theirs was an identity through what was inaudible, corporealizing the otherwise abstract notion of negative sonar spaces, or a "sonic invisible." The *figments* capture system was the opposite of the experience of the blind friend: it produced an animated figure

FIG. 57 above, *contours*, 2000



based on the audio presence, the "sonic visible," of the moving body of the performer. This sonic data was then translated into a figure that was inserted into the digital space of the visual field, a visual space that felt surprisingly flat and empty when compared to the messy sonic landscape of the room. For the blind man, space was animated by sounds, and bodies were an absence of sound. Yet this sonic absence was equated with a personality or individual. For me, in the motion capture system, my bodily movement was animated against a backdrop of nothingness, but I knew that this nothingness was alive with ultrasonic waves and created a personality for the figure that was more than simply a mapping of my movement.

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Even when the *figments* system worked at its optimum, stillness for the animated figure involved a slight shudder, a slight wavering, like seaweed suspended in an all-but-still pond. A passage often cited from Merleau-Ponty's writing is his consideration of water in a pool and the reflections cast onto the underside of trees. He sees the pool's tiles through the water, and the space around is full of the water's reflections; perception does not act to correct any distortions caused by the elements at play in the scene (moving water, flickering light, air currents, waving trees); rather, it occurs through and because of them:

**If there were no distortions, no ripples of sunlight, if it were without this flesh that I saw the geometry of the tiles, then I would cease to see it as it is and where it is—which is to say, beyond any identical,**





specific place. I cannot say that the water itself—the aqueous power, the syrupy and shimmering element—is in space; all this is not somewhere else either, but it is not in the pool. It inhabits it, it materializes itself there, yet it is not contained there; and if I raise my eyes toward the screen of cypresses where the web of reflections is playing, I cannot gainsay the fact that the water visits it, too, or at least sends into it, upon it, its active and living essence. (1964a, 182)

The poetic beauty of this passage is often used as a way to dismiss its philosophical and perceptual insight, as if conceptual revelation could not happen through sensory pleasure. In addition to providing a basic understanding of embodied and situated perception, this passage provides a metaphoric leap required to make sense of the visual, sonic, and responsive peculiarities of the *figments* system. The pool was the physical room in which we performed. It was disturbed by the incessant but inaudible clicks used to keep track of the five sensor points on our limbs. These sounds traveled in waves, bouncing off the walls and floor, echoing across the physical structure of the room. The pool was also the digital space held within the computer monitor and the head-mounted display worn as goggles by the dancers, allowing us to see the digital space before our eyes at the same time as the physical space could be seen in our peripheral vision. These two pools were continuous, just as the water in Merleau-Ponty's tiled pool and the viscous, shimmering element reflected onto the leaves were continuous. Further watery responses were elicited in the *figments* space when another person, not wired up and seemingly not connected to the animated figure, traveled



through the physical space at a rapid rate. Their wake in the sonic dimensions of the room would disrupt the tracking process and make the figure respond with large, unexpected movements, as if tossed about by the sound waves. This seemingly "uncaptured" and invisible person was, in concrete terms, able to elicit a response from the system through the connective tissue that was the collective space of sound.

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Being in the system meant more than just having the microphones and HMD: the inhabitants of this shared pool also included the other performer, audience members who strayed through the room, and of course the visualizations. I noticed my channels of perception and responsivity became hypersensitized, perhaps because there was so much seemingly nondeterministic behavior occurring through the system. Action A was less likely to produce response A or even response B, I had to be prepared for responses X or Y. At times the tracking system would malfunction, causing the figure to do something entirely other like kick its leg when I had not kicked my leg. These uncontrollable eddies became a feature of the installation; some days they were more violent and unpredictable than others. In the split second of this phantom movement happening, I would occasionally pre-reflectively attribute it to the other performer in the space even though he was not attached to the computer the way I was and ostensibly was not being captured. It was almost as if the other had taken control of one of my sensors and inserted his movement information into the relationship between myself and the animated figure. Thus, our relationships in space became triangulated: across

FIG. 59 above, *contours*, 2000

myself and the other performer, across myself and the image that I generated, across the other performer and the image even though he exerted no direct control over it, apart from coexisting in the same performative space with it.

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As I began to realize the levels of distortion and unpredictability in this system were higher than in any previous one, different corporeal and affective paradigms emerged: those of illness, of pain. And of humor. Comedy arrived, unannounced and unexpected, piggybacking on the distorted relationship of puppeteer to puppet evoked by the performer and the image tied to her movement. Due to the inherent imprecision of *figments'* system for performance animation, exact replication of movement was not possible. Delivered instead was comedy. When the vagaries of the system were not so great that the figure seemed to be in distress or transcended all anthropomorphism, when the figure responded nearly in real time with only a small time lag, this elicited a comedic response from the performer: prancing around the space, silly runs, exaggerated arm and leg movements. The figure shifted in size depending on the position of the performer in the space, with an extraordinary knack for becoming larger and spilling out of the frame, in a weird sort of looping embrace of the space as arms and legs wrapped and extended. Covering a microphone-sensor with one hand while traveling through space resulted in stretching a limb of the image, whereas uncovering the sensor made the limb bounce back. The twitches, kicks, and jerks that were the result of the computer losing track of the body were interpreted as naughty responses on the part of the figure. The system did not need intelligence programmed into it in order for autonomy or even agency to be attributed to its cheeky progeny.

Demonstrating vividly the suggestion that according to Spinoza a body is that which affects other bodies, or is affected by other bodies, the figure was able to make me react to it with that mix of confusion, discomfort, and compassion we have when faced with the pain of another. The final performance was marred by the system tracking only 10 to 20 percent of the performers' movements, and the animated figure generated became analogous to an autonomous being exhibiting extreme psychosis: it was only intermittently aware of external stimuli; the rest of the time it engaged in a violent dance of dismemberment. It shook, it leaped, it froze, it shrank and grew; its limbs flew about and flapped in response to imagined stimuli. The effect was disturbing. I felt as if the figure was in considerable distress and wanted to save it from the demons that tormented it. I had an visceral reaction. The figure was like an animal in pain, and I felt traces of this, as if, as for Spinoza, there existed one substance (or flesh) for all the attributes, "one Nature for all bodies, one Nature



for all individuals...no longer the affirmation of a single substance, but rather a the laying out of a *common plane of immanence* on which all bodies, all minds, all individuals are situated" (Deleuze 1988, 122). Rather than argue in a reductive fashion that one person can feel another's pain, it is enough to say that human beings apprehend the effects of the composition and decomposition of relations. This is a Spinozan argument. Deleuzian Spinozism takes the relations between self and other into a multiplicity of relations including those one has no part in. Joy is experienced when a body encounters our body and enters into composition with it, or when an idea enters into a similar relation with our mind; sadness is the effect when a body threatens us with decomposition, or an idea damages our sense of coherence. When we are exposed to a body in a state of decomposition the effect is that we will feel one of the sad passions just by being presented with it because we are too able to sense the same decomposition affecting ourselves (ibid., 19). There is no reason to assume that there will not be a similar affective result if the body is a digital or a fictional figure.

At that time of the performance of *figments*, I was drawn to juxtaposing phenomenological reflections with principles and metaphors from computational research into Artificial-Life, suggesting that an experiential account of performance can be the basis for a dialogue across science and arts. Looking to A-Life was a first attempt at providing a wider context for my sense that the data with which I danced was more than mere representation, the basest level of mimesis. I looked to A-Life to provide considerations of alterity, agency, autonomy, emergence, adaptation, and even metabolism—in short, for some way to understand how an array of pixels might instill in me a human response. I searched for kindred research and practice in a community like that of artists that both constructed and conceptualized.<sup>30</sup> The intrigue of scientific pursuits into A-Life is that they ask us to imagine life-as-it-could-be in order to illuminate life-as-we-know-it (Langton 1996, 40). These imaginative, computational worlds are generally based on the premise that they are excluded from our own world, either by existing in a computer or in a conceptually self-contained world. The media used for experiments into A-Life include computers, robots, and (bio)chemical soups. Since this permissible range of media travels from the organic to the inorganic, by way of biology, robotics, and computer programming, I wondered whether was a possibility for artificial worlds to collide with our own, or, in other words, to be entwined with ours.

*figments* felt like the birthing of a sentient system over the course of the six-week research period, so I attempted to inject scope for performativity and physical spaces into the A-Life imaginative construct of life-as-it-could-be. Could this "could-be" life share some of the physical spaces and

materials with life-as-we-know-it, while still having a revolutionary impact on life-as-we-know-it? As ever, the artistic and philosophical goals were to see whether new paradigms of human engagement with computer systems could challenge existing norms and conventions in arts, sciences, and culture. A-Life proved to be a dead end. It labored the notion of life by remaining committed to an ontological approach that was essentialist and substance driven. For the most part, the A-Life community was concerned with arguing *what* artificial beings were, when I needed a phenomenological ontology that was concerned with *modes* of being, or responsivity. I looked to A-Life discourse for innovation and a little magic (some of the rhetoric exhibits a certain amount of drama and hyperbole), but in the end I could not find concepts sufficiently vital and dynamic to converge with, and illuminate, my embodied experience. Subsequently, I learned that what I needed in order to understand the radically unstable alterity encountered through *figments* were both the kinetic and dynamic propositions regarding bodies that Deleuze identified in Spinoza: the motion and rest of particles, and the capacity for affect and being affected (Deleuze 1988, 123).<sup>31</sup>

- 266 A body has a capacity for affecting other bodies. This body can be a human, an animal, an artwork. "A body can be anything; it can be an animal, a body of sounds, a mind or an idea; it can be a linguistic corpus, a social body, a collectivity" (ibid., 127). A body can be digital data, generated entirely from a computer, extrapolated from my movement, or an interpolation of the two. After interpreting Merleau-Ponty's intercorporeality through a Spinozan filter so that it includes the inanimate, and Levinas's alterity through the same filter so that it stretches to the nonhuman, we have come to a place where there are no philosophical acrobatics required to meet the phenomenological reality of performing with motion capture data. Bodies are speeds and affects. They are in motion and rest, they affect and are affected. "A body, however small it may be, is composed of an infinite number of particles; it is the relations of motion and rest, of speeds and slownesses between particles" (ibid., 123). This is the first attribute of a body, that it is made up of particles in motion; the second is that it affects or is affected by other bodies. Both attributes are evident in *Contours*: the software for one section produced particle systems that responded to my dynamic impulses by visually exploding into clouds, then quieting into a single stream when the motion subsided. Suspended in a low-slung harness, toes barely touching the ground, my limbs were pulled in many directions at once, my center of gravity was ripped from one location and thrown outward, tossed. Inverted and spinning, the particles flying like sparks off my body, I lived the complex relation between stillness and acceleration, releasing a surge of motion and swallowing it into one small suspended point of stillness, like holding a breath.

Ethics "is about being positioned by, and taking a position in relation to, others." Taken further, it relates to one's character, dwelling and habitat, and is registered, according to Diprose, as "the problematic of the constitution of one's embodied place in the world" (1994, 18-19). When our world consists of ever-expanding digital modalities, our ethics has to take into account our embodiment across materialities and our relation to others as they are embodied across materialities. An ethics relevant to our times spans digital bodies and human bodies, and how we behave toward ourselves and others once we are diffused across materialities in the world: our expectations, our habits, our hopes and fears, our visceral reactions and intellectual categories all merge and converge. It is a comfort to return to Diprose and her lush reading of Merleau-Ponty. Deleuze, despite the intellectual excitement he generates and the uncanny revelations of his account of Spinoza for *figments*, always feels cold to me, as if I have entered a centrifuge or a supercollider, that long tunnel underground where atoms are smashed into particles. The plane of immanence contains all possible individuals, speeds, arrangements, and affects but it feels like a garden before it has been planted, like setting the conditions for joy and sensuality without actually getting there, a dispersed corporeality that loses the inherent vulnerability and fragility that make a body human. Diprose with her Merleau-Pontian interpretation can be used to soften Deleuze. I warm to her indication that we operate within the affective and transformative dimension of intercorporeality. Sensibility "is fundamentally open and transformative of the self, the other, and the social norms that inform it" (Diprose 2002, 105).

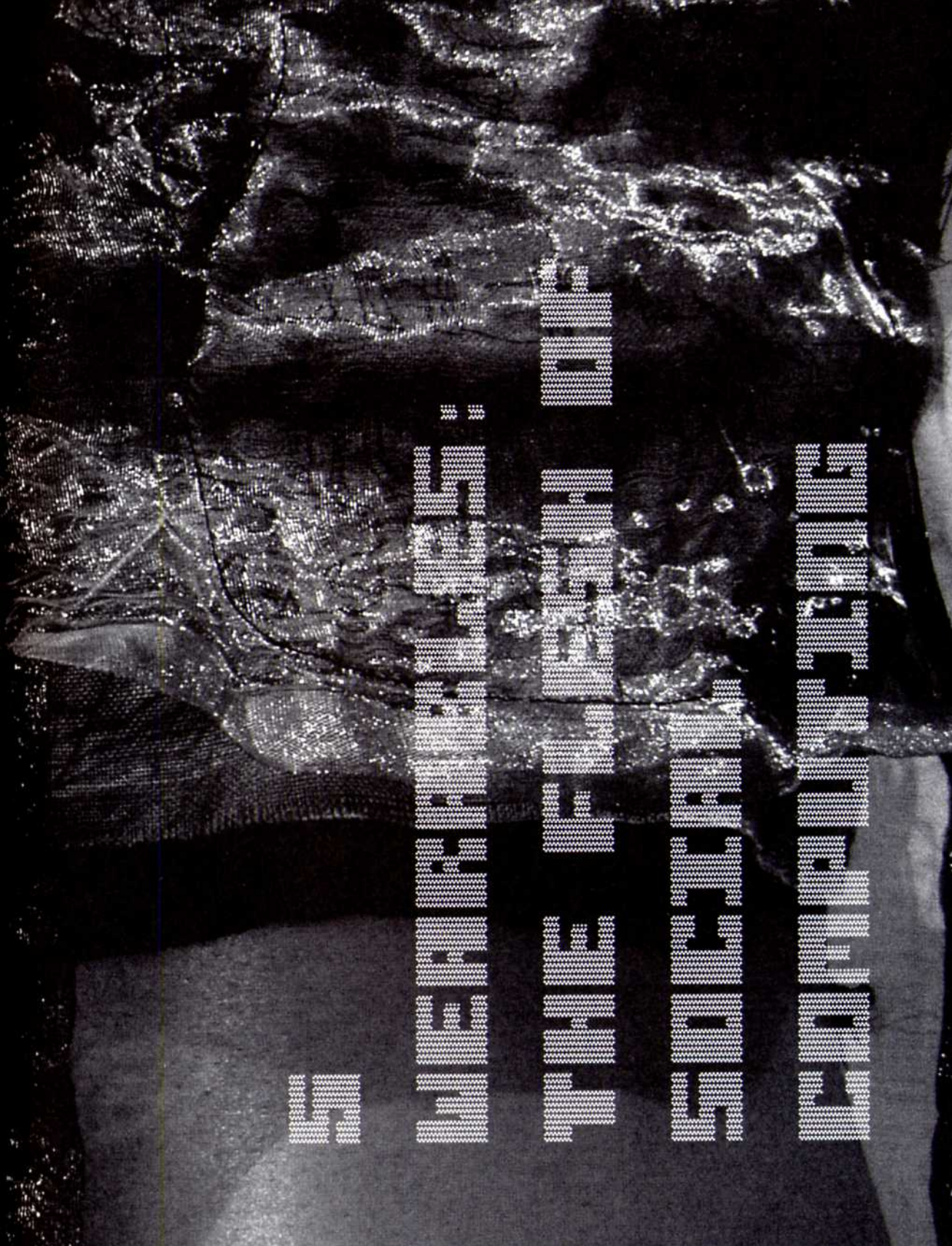
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My data is not radically discontinuous from myself. I hold onto a body as a way of engaging with the world and with others. These two moves may be seen as limitations of the ethical reflections in this chapter, certainly if the radical alterity of Levinas's approach and the dissolution of the "body proper" (*le corps propre*) of Deleuze's approach are accepted. I ride the momentum of thought from Merleau-Ponty, to Levinas, to Deleuze to explore the limits of alterity and push the scope for motion, but in the end I return to Merleau-Ponty, recognizing that I am not on a conceptual journey alone. I am a phenomenologist, and I receive and integrate through hyperreflection what I learn through performance: my data is strange but also close, my body is porous and permeated with other, but it is still how I live in the world.











Where are we to put the limit between the body and the world since the world is flesh?

— MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

270 Close, closer, closest. The final chapter in this book is on wearables. The closing chapter. The trajectory of convergence between bodies and technologies gaining momentum over the course of this book reaches a pinnacle in this chapter on wearable computing—miniaturized, embedded, wireless computers worn on, and warmed by, the body, enhancing abilities to transport, store, communicate, and modify personal data. Anyone with a knowledge of experimental digital arts practices might ask why this point of convergence between bodies and technologies is not also the point of a scalpel, why this chapter is not a consideration of biotech, piercing or penetrating the skin in order to achieve a bloody proximity between bodies and technologies. This could be the next stage in the journey of closeness, but the conviction that technologies come closest to bodies through biotech or surgery is based on maintaining a divide between inner and outer, on the assumptions that skin still acts as a barrier and that flesh or tissue needs to be physically opened up in order for there to be an ultimate convergence or confrontation between flesh and technologies.<sup>1</sup>

The phenomenological exchanges across performance, responsive systems, and ideas from Merleau-Ponty, Levinas, and Deleuze developed in the previous chapters call for a more subtle approach to closeness, not one based on subsumption, on the swallowing of one by the other. If the Merleau-Pontian notion of flesh is taken seriously, there is no need to pierce, cut, ingest, or extract in order to achieve a state of closeness or integration: we are already inside out, already porous, already one flesh that is not one flesh. In this chapter, the play between the internal-



Visible and mobile, my body is a thing among things; it is caught in the Fabric of the world.

— MAURICE MERLEAU-PONTY, "Eye and Mind"

ity of affective states and the externality of social choreographies facilitated by mobile wireless devices will build upon the approach to ethics introduced in the preceding discussion of alterity and motion capture, according to which ethics is seen to be a topology of immanent modes of existence rather than transcendent values (Deleuze 1988, 23). If wearables enable a dissemination of immanence, how are our corporealities and our socialities transformed?

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There is an extraordinary push-pull to wearable and ambient technologies, a dynamic of seduction and repulsion. We are seduced by the convergence of computational systems with corporeality (wearable technologies) or by unseen systems that anticipate corporeal needs (ubiquitous computing); seduced by the potential expansion of our senses, intellects, and imaginations, of how we engage with the world, how we communicate, how we remember the past and project desires into the future. Yet we are only a breath away from repulsion at the specter of the monstrous body or monstrous forces of surveillance and control lurking just behind the technologization of the body. Once the domain of research and performance converges with skin, blood, flesh, internal organs, biology, or DNA, political questions around who controls, owns, or has access to our bodies are unavoidable.<sup>2</sup>

In this chapter, the phenomenological ground for reflecting upon affective performance and social choreographies is provided by experiences around the design and implementation of the *whisper[s]* research project in wearable computing.<sup>3</sup> This initiative, along with the increasing array of wearables



272 projects that engineer innovative convergences among biometrics, fashion, performance, and design of smart wireless devices, finds itself within a contentious political domain: that of biometric tagging, public and private surveillance, and the acquisition, storage, and interpretation of personal data by governments and corporations, all in the interests of that ethical and political black hole called national security. Before too long, citizens of most countries are likely to have personal biometric data (DNA, blood type, fingerprints, retinal scans, details of diseases or medical conditions, history of medication) embedded in identity cards and passports, prompting questions around why we need a plastic card in our wallets if the data can be embedded in our bodies on silicon chips or RFID (radio frequency identification) tags such as those used to track dogs, and, increasingly, children. Digital art that deals closely with the body, and bio art that enters the body, offer grounds to reframe classic tensions between the beautiful and the sublime: the sublime is no longer simply the monstrous body or the awesome spectacle, but relates to external control of our transformed corporealities.<sup>4</sup> The convergence of digital information with corporeality has a sinister side, yet, like Amin and Thrift's "politics of hope" emerging from the new approach to urban life as "performative improvisations which are unforeseen and unforeseeable," the message of this book is not apocalyptic (2002, 4). Instead of running from the technologies used to control us, ingenious members of the public (artists, do-it-yourself aficionados, teenagers, hackers, gardeners) have histories of using, adapting, and subverting products and systems. The design of wearable devices, and their intimate performance, are situated in this field of creative social improvisation.



The methodology sustaining this chapter is more akin to heterophenomenology than phenomenology: I witness, receive, and interpret the experiences of others in the *whisper[s]* garments embedded with wearable computers and filter these through my own experiences of collaborating on the design of the garments and of performing the role of guide in the installation.<sup>5</sup> Quite deliberately, this methodology reflects the innately social qualities of wearables, or at least the multiplicity they evoke: multiple narratives, multiple sensations, multiple affective states, multiple corporealities within myself and across bodies. From the "carefully scripted performances" that we enact in "omnisensory" public spaces to the conviction that images, objects, and spaces perform for, with, and in spite of us (ibid., 2002, 122), explicit references to performance and choreography populate approaches to bodies, mobile technologies, and urban spaces, and not just from theater and dance practitioners. Locative media artists, geographers, sociologists, and philosophers of technology are increasingly attracted by notions of social choreographies or performative corporeal acts in order to account for the multiplicity of bodies networked across the physical and the digital.<sup>6</sup> The idea of flesh that has filtered through the previous chapters in this book will be even further "fleshed-out." Social choreographies as revealed by iterations of the *whisper[s]* project will be used as a lens to examine and critique discourses around locative media in urban spaces, and the streak of abjection inherent in wearables research will be revealed.



## DATA CHOREOGRAPHY

274 Performative approaches to wearables can be adopted as critical strategies to celebrate explicitly the closeness of bodies and computers by remapping the expressive and corporeal conventions seemingly hardwired into our devices or systems. All of our devices invite a set of physical gestures either determined by the data they convey (voice, text, visuals), by ergonomic (or non-ergonomic) design, or by the set of codes communicated across distinct social groups indicating how to use and wear devices in different social settings (the club, the subway, the library, the boardroom). The mobile phone is a vibrant example: Do people hunch into it or speak loudly as an indication of social or financial status, hide it in layers of clothes or expose it, place it on their desks beside them or dig in the bottom of their bags for it? Is it set to ring loudly or softly, or is it almost never switched on?<sup>7</sup> Qualities of performance—ephemerality, expressivity, humor, poetry, physicality—integrated into the design and use of wearable devices can act to disrupt, to delight, and to challenge conventional uses of devices, databases, and networks. Choreographing the flow of data involves being aware of what it is, who receives it, when and in what form, according to which rhythm, and whether of narrative or affective quality. Choreographing my data, whether my movement patterns, my voice, my scribbled thoughts, or my heart rate, is like saying I want to play with my data and yours, to flirt with them and with you, to abstract and shape them into expressive portrayals of who and what I am, and of my relationship to you. Data choreography across social contexts contributes to an emerging and adaptive poetics, a chiasmic aesthetics of disappearance and exchange across the physical and the digital, where stillness and quiet in data exchange are as integral as acceleration, and

discontinuity and disruption are as important to the ontology of human corporeal exchange through digital devices as are continuity and connection. It is politically and choreographically significant for me to make a choice for my data to exist in a certain manner, and then for it to disappear or to be transmuted. If I want to preserve it, I can choose its modality and location; I may translate an affective state into a simple melody and save it as an MP3 file, but I may prefer heartbeats to be preserved as memories, floating and frayed over time. This is the approach to social computing offered here: it is viewed in terms of the rhythms and flows of immanent states radiating outward.

Data choreography is about transubstantiations, such as those that Merleau-Ponty claims occur when I lend my body to the world, like the artist. And I do this, all of us do this, by being visible and mobile. My mobile body, "the nervous machine," inheres in the world, gets caught up in things and others in the world (Merleau-Ponty 1964a, 162-163). Hubert Godard, whose research in neurophysiology and somatics rests on a foundation of dance and philosophy, once asserted: "The body does not exist, we are nothing but connective tissue."<sup>8</sup> His words, which I initially resisted, left such an impact on my way of living in my body that as I sat quietly in a room the following day I felt my skin dissolve and tendrils of my body reach and wave in the space. I also felt a raw vulnerability, for the dissolution of my armor of skin meant not only that I could extend into space but also that what was beyond me could reach into me: permeate and germinate. For a moment I became nothing but nervous system, a nervous machine. The myth of the self-contained body collapsed into dust





276 around my feet, my body was truly "caught in the fabric of the world" (ibid., 163), and this fabric was the connective tissue, or flesh, of my body, things, others, and the space between things.

Merleau-Ponty's idea of flesh is not based on the suggestion that everything is made of the same substance, like atoms, ether, or blue cheese. Such a notion would have little scope for movement, for choreography. It is concerned with active perception and living in the world. Flesh is both visible and invisible. Flesh is not just that which is seen or felt, it is the very reason we can see or feel at all; flesh sustains the chiasmic relation with the world according to which I see and am seen, touch and am touched; it is the means of communication between ourselves and the world. Viewing flesh as connective tissue helps escape the tendency to think of flesh as lumpish matter; when Merleau-Ponty says that flesh "is not matter, is not mind, is not substance," that it is not visible, "it is not a fact or a sum of facts 'material' or 'spiritual,'" we are put in a position of having to infer flesh by skirting what it is not (1968, 139). The reason for this is that flesh is lived; it is not a category or a thing. When flesh is experienced through our embodied engagement with the world, it exists across the senses and across all our connections with people and things. It is possible to understand it as a dynamic web of perceptual and behavioral relationships. Human connective tissue, "the binding, strengthening, connecting, and separating web," is a compelling vehicle for understanding the wider philosophical concept of flesh (Myers 2001, 25). Flesh operates on physical, social, dynamic,

FIG. 61 above, *whisper[s]*, 2003-2005





infrastructural, and metaphorical levels, allowing us to extrapolate from connective tissue to bodies, objects, societies, cities, and ideas. 277

This is where it is useful to begin to think of connective tissue as a network, or as a set of networks, and to direct our awareness at the gaps or latencies within their fabric, seeing them as fluid and dynamic. Data choreography can take place at all only because we are connected, not just through our telecommunications networks but through physical, affective, and social networks. As sketched in chapter 1's discussion of connective tissue and fascia, networks are more than ways for us to maintain connection; they are ways for us to maintain distance, or to engender difference. The difference in our physical bodies is eroded by static perceptual and anatomical models as subtly and thoroughly as difference in our cultural bodies is eroded by homogenizing social and political categories, but human connective tissue maintains both dynamics: "Through fascia, everything in the body is both unified and differentiated" (Maitland 1995, 223). Human networks, in particular social and corporeal ones, do not operate on the basis of clarity and sustained connectivity alone: they are systems of ebbs and flows, with secrets, dark spots and attenuated periods of waiting, in counterpoint to the dizzying speed manifested by rapid flashes of shared insight or moments of seeming telepathic connection. The flesh of things is more about the gaps between them than their substance, "less a color or a thing, therefore, than a difference between things and colors, a





278 momentary crystallization of colored being or of visibility." Merleau-Ponty locates tissue between visible things, something that "sustains them, nourishes them, and which for its part is not a thing, but a possibility, a latency, and a *flesh* of things" (1968, 132-133).

Human connective tissue is a living metaphor for broadly construed physical, social, and digital networks. If we accept a Merleau-Pontian understanding of incarnation as an intercorporeality, my body is always already caught up in the fabric of the world and there are traces of the other in me. On the basis of this my connective tissue does not stop at the boundary of my skin; it is a lattice that embraces my interactions, or choreographies, with people, animals, devices, memories, and thought. Choreography is about variation and relations, between bodies in space and time. Merleau-Ponty's description of the color red reveals an understanding of choreography that can be mapped onto the exchange of data: "this red is what it is only by connecting up from its place with other reds about it, with which it forms a constellation," and it attracts or is attracted by other colors, repels them or is repelled by them, dominates or is dominated by them, existing as a "node" in the temporal modalities of the simultaneous and the successive (ibid., 132). This dynamic of attraction and repulsion, sharing and containment, forming a shifting constellation across time is a way of understanding the data choreography fostered by wearable devices.<sup>9</sup> My body may not exist, nodding to Godard's provocation, but as connective tissue I live an even greater space of potential, an expanded corporeality that is permeated by interstitial spaces that I reach across in hope and

FIG. 62 above, *whisper[s]*, 2003-2005



in vulnerability, sometimes in lust and anger, or that I seek to stretch in fear or pain. I am like the color red inhabiting elastic zones of interface between myself and myself, or between myself and others. Performance occurs in these interstitial spaces, both everyday performances and artistic performances.



## CORPOREAL TELEPATHY

280 Mobile phones transmit voice, text, images, and sound. PDAs preserve and manipulate the more rational, organizational aspects of our personalities and lives. The convergence of the two allows for the search and exchange of a wider hypertextual amalgamation of data. But what of the truly nonverbal layers of our communication? What about the way our communication occurs on the threshold between the tangible and the intangible most of the time, between that which can be articulated and that which escapes language? The design of the *whisper[s]* project is based on a sensory computational platform affording the choice to attend to one's physiological data or affective corporeal state and to send it to another as a poetic amalgamation of sound, visualizations, and haptics. A loose acronym, *whisper* stands for *wearable—handheld—intimate—sensory—personal—expectant—responsive*. Motivated by the desire to facilitate nonverbal communication through our mobile devices, to expand the idea of wireless local area networks (WLAN) with an awareness of sensory body area networks, and quite simply the desire to wear responsive, sensual computers on our skin, the *whisper[s]* project provides the experiential basis for reflections upon flesh and data choreography. Still in the process of being developed, the project in its current state offers garment wearers a range of possibilities for intention and attention. For example, an inwardly directed intention to listen to breath and to translate this into outwardly directed attention to others is achieved by means of a respiration sensor in a personal garment and haptic outputs in the garments worn by others. One person's breath causes vibrators and fans in the lining of another person's skirt to come alive with its corporeal rhythm. In addition, the collective breathing patterns of a group of participants is translated into a shared sound composition, effectively a sonic representation of an ecosystem of breath.

The words *attention* and *intention* come from the Latin root *tendere*, to stretch, as in *tense* and *tension*. Attention comes from *ad* + *tendere*, literally meaning "to stretch (the mind) toward." Intention comes from *in* + *tendere*, "to stretch (the mind) into."

—RUPERT SHELDRAKE, *The Sense of Being Stared At*

With uncanny prescience to the proliferation, fifty years later, of devices and technologies worn close to our skin or in our bodies, Merleau-Ponty wrote of things "incrusted" in our flesh. Things, he wrote, are "an annex or prolongation" of the body; "they are incrusted into its flesh; they are part of its full definition; the world is made of the same stuff as the body" (Merleau-Ponty 1964a, 163). My body is a thing among things because I see but am seen, by myself and by things. Things see me, whether or not they are intelligent devices with sensors or cameras. This was neither a fetishization of the machinic that characterizes much of cyborg discourse, nor an assumption that this proximity with things heralded the demise or obsolescence of flesh. It was Merleau-Ponty's strong statement of the body's belongingness to the world. That which I sense also senses me, whether this is person, animal, or machine. In other words, to feel one's body is also to feel its openness to the other: the other's capacity to receive sensory information from me is implicated in my own sensoriality. It is as if communication flow to and from others is hardwired into my very structure; I moderate and regulate, decipher and interpret, inhale and exhale, sensing my own and others' bodies at all times. I do this according to a sort of perceptual telepathy, or with the assistance of telecommunications devices. In a little cited and hard to decipher working note to the *The Visible and the Invisible*, Merleau-Ponty refers to telepathy as a state of being for the other; he writes that "to feel one's body is also to feel its aspect for the other." This telepathic connection is not the popularized version of a latent message conveyed between two beings by psychic means; it is simply that "the other's sensoriality is implicated in my own" (Merleau-Ponty 1968, 244–245).



282 "Wearables for the telepathically impaired" is the phrase the artists of the *whisper[s]* project use to describe the intelligent, sensory whisper garments. When anyone has not quite understood the garments' complex technological configuration, or grasped the array of concepts, this quasi-ironic but strikingly apt phrase has a way of making them nod their heads as if to say "Aaaah, now we get it. Why didn't you say so from the beginning?" It implies that contemporary Western bodies have forgotten the full scope of our ability to transmit and receive qualitative and affective messages from one another, and that wireless wearable devices can step into this lacuna to help us regain these sensory and cognitive data flows.<sup>10</sup> Slightly adjacent to the notion that we have these channels of communication but have simply forgotten them, or do not have the techniques of awareness to tap into them, is Rosalind Picard's suggestion that technologies might increase affective bandwidth. With a particular emphasis on virtual environments, she writes that "computer-mediated communication might potentially have higher affective bandwidth than traditional 'in person' communication" (1998, 57). While the *whisper[s]* approach is based on a similar belief that computational systems can augment human communication if they are designed to handle a broader range of human qualities, her view of affective computing is concerned mainly with emotion or mood. We are working with a wider affective palette, and a somewhat different definition of affect. This is revealed when telepathy, as "distant feeling," is seen to be an anticipation of the other's perception, intuition, or thoughts as well as emotions. It is not only an indication of the presence of what Merleau-Ponty calls the "imminent, the latent, and the hidden" channels of communication, but also a revelation that I am profoundly connected to others by how I sense and live in the world (Sheldrake 2003).

FIG. 63 above, *whisper[s]*, 2003-2005





Amplifying the poetic capability of our mobile devices and their convergence with our bodies, both in what they convey and how they are worn, are two of the goals of the *whisper[s]* project. So too is recognizing the increasingly performative, playful, and intimate roles our devices play in our lives. Invisible layers of emotion, physicality, vitality, imagination, gesture, and attention act as the glue of human exchange. Inherently nonverbal and on the fringes of the visual, new mobile devices are required to access and transmit this data offering different configurations of sensors, actuators, and networking protocols. Wearable devices as they are networked together, between bodies or traversing a single body, bear witness to our constant exchange with alterity as a form of having-the-other-in-one's-skin (Diprose 2002, 115). Developed collaboratively across dancers and engineers, the *whisper[s]* devices emphasize techniques of attention and intention: the devices encourage the wearer to direct their attention to the more subtle layers of physicality and consciousness, to be aware that these layers exist quietly beneath the overt mental chatter of daily life. Not unlike meditation techniques, the use of wearable devices provides a means to redirect attention and to communicate, if we choose, the more subtle and affective currents of our beings to others. As with dance, techniques for listening and expression that animate the whisper system result in gestural and choreographic patterns across clusters or networks of bodies. It is this way that techniques for listening and sharing inner body states result in social choreographies.

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FIG. 64 above, *whisper[s]*, 2003-2005

## AFFECTIVE COMPUTING

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The decision to design wearables based on the combined infrastructure of the philosophical notion of flesh, choreographic patterns of social computing, and the expression of affective body states is, for the most part, distinct from the approaches to wearable computing offered by disciplines such as engineering and medicine. Picard identifies a dominant stream of research into the miniaturization of computers worn on the body as motivated by the goal of creating the ultra-efficient worker. This is often achieved by means of the cumbersome and quite old-school cyborg approach to wearables that simply involves strapping a computer to one's body by distributing its components of processor, camera, keyboard, or keypad onto limbs, head, and torso. "Today's wearable computers are more suited to the natural ways of businessmen, maintenance workers, medical patients, and consumers who would like to consolidate their cell phone, laptop, pager, camera, and Walkman into one easy-to-wear device" (Picard 1998, 227). This approach to wearables generally regards them as always-on, always-running presence-aware systems that facilitate actions and occasionally perform tasks without the wearer being aware.<sup>11</sup> A defining characteristic of wearables designed and used in many corporate and scientific settings is that they manage a steady flow of communication (Web browsing, email access and composition, receipt and transmission of visual and sonic feed, storage of media and personal playback, and in some cases muscular control of robotic devices, both large and delicate). Wearables are part of new "information ecologies" in cities that may combine heterogeneous spaces in unforeseen ways, but that contribute to immunizing our society against disorder, with both beneficial and worrying side effects (Amin and Thrift 2002).

Now it is inside the body that something is happening; the body is the source of movement. This is no longer the problem of the place, but rather of the event.

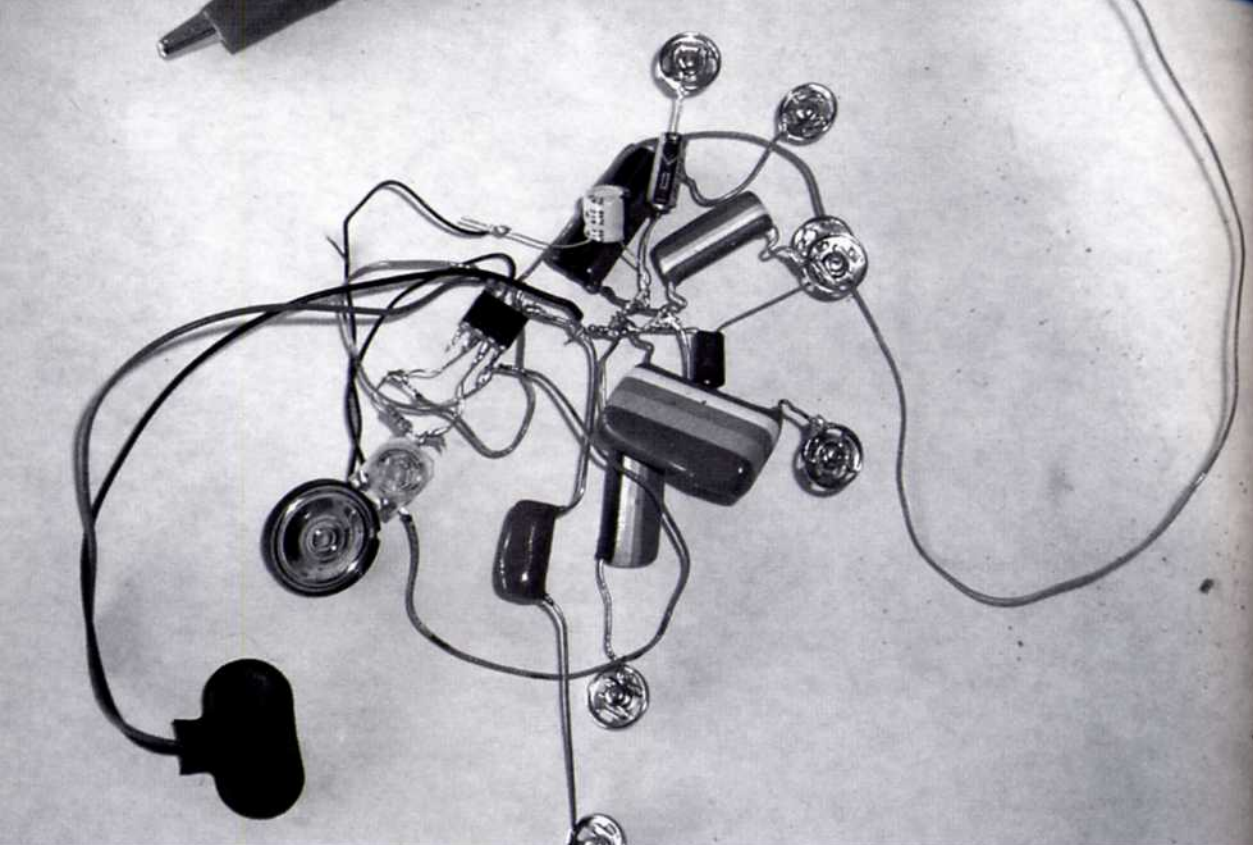
—GILLES DELEUZE, *Spinoza: Practical Philosophy*

This array of functionality is addressed by Picard in *Affective Computing* (1998), adding her contribution of emotions to the mix. According to her argument, affect equals emotions and computers do not have to have emotions in order to be able to communicate emotions. Calling attention, as she did, to emotions amid this array of functionality was invaluable, and devoting resources to designing physiological inputs for computational systems is relevant to a broad range of applications. Artistic approaches to wearables may use similar functionality, but when the questions "why do we want this device" and "what do we really want to communicate" are asked, different answers tend to arise. In a revealing side comment, a designer who worked intensively on a wearable computing dress and was coming to grips with its utter lack of market success said, "Nobody wanted it... not because it was too expensive... who wants to have your mobile phone and MP3 player with you all the time?"<sup>12</sup> Functionality and efficiency are crucial for certain professional applications: nobody wants a surgeon wielding a robotic scalpel by means of a wearable device with a large margin of error, but other applications speak to the less functional realms of imagination, poetry, and science fiction. Viewed in this way, wearables may have more in common with fashion and entertainment and less in common with time- and labor-saving gadgets.

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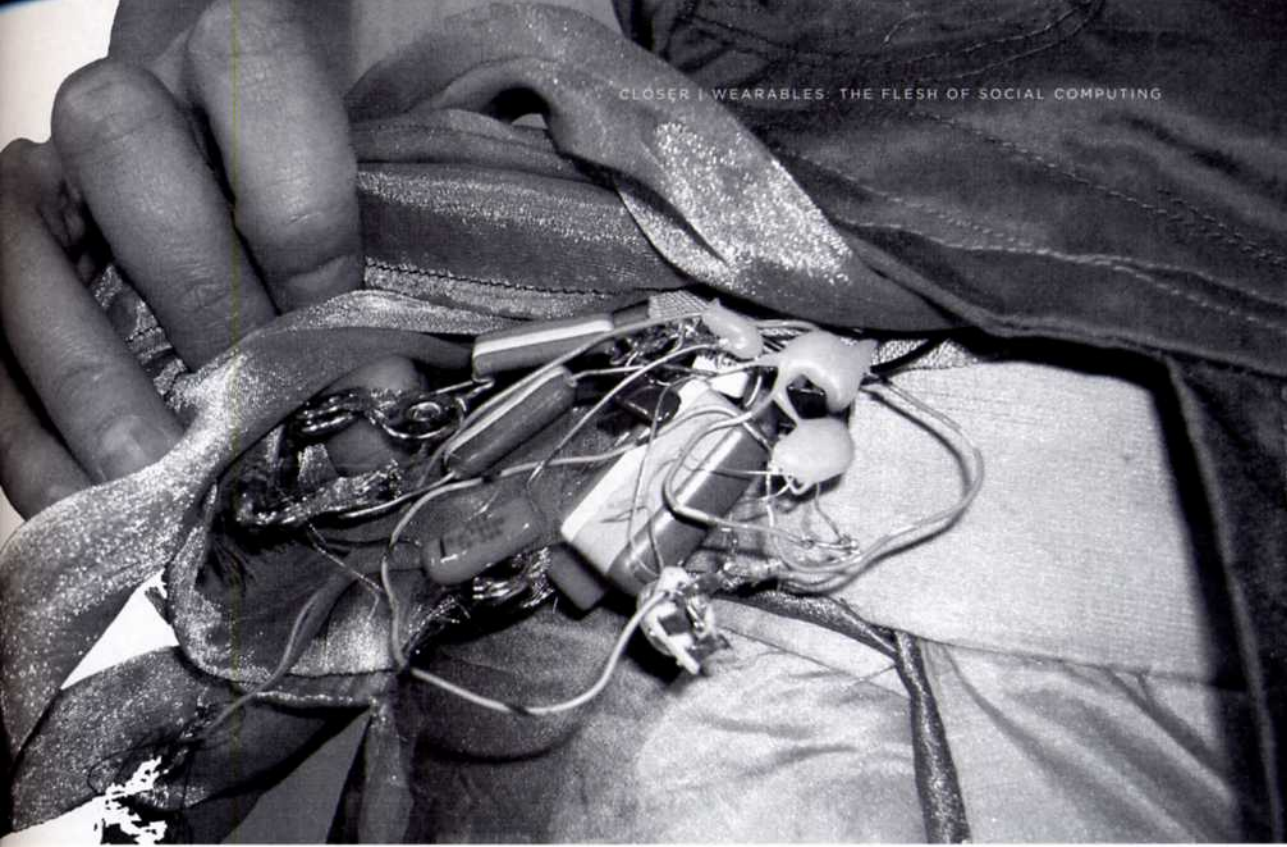
Fashion can be about many things, but for the story I am telling here what is important is fashion's potential for materializing imagination, its seasonal ephemerality, the ability for style to respond to a corporeal and affective state one day and not the next, and the different ways we perform





286 and express ourselves when we wear one garment and not another. Wearables are worn close to the body because we want them to be there; we invite them to be there and to share our personal space with fluid and transforming expectations. It is here that they rub shoulders with domains of body modification and prosthetics: techniques and technologies of the body, from martial arts to robotic arms, outline and amplify the metaphysical structure of our flesh (Merleau-Ponty 1964a, 168).<sup>13</sup> The poetic aspects of wearables are set in motion by design decisions from the earliest stages of development. Even a lack of attention to sensuality, kinaesthetics, or poetics is, by default, succumbing to a particular look and feel. The conditions for a particular poetics are set in place by decisions to make the circuitry and wiring softer, pliable; to create degrees of responsivity and configurability; to make the wearables subtle or even hidden. Designing with an awareness that by means of a wearable device we enter into a duet with ourselves as well as with others is designing from the standpoint of flesh, as is affording the ability to alter its modes and functions, to take it off, and, crucially, to switch it off. It is for this reason that configurability holds a place of prominence in the *whisper[s]* design specifications. Over time the devices may resemble a cross between "cyber-jewelry, exquisite art objects, creepy prosthetics, peculiarly ornate theatrical costumes, and body sculpture," but at the same time they are intended to offer maximum configurability accomplished by "plugging in" components (like respiration or heart sensors), and by mixing and matching functions within a modular system. Basic analogue devices like vibrators can be used alongside more sophisticated components (including biofeedback—or brainwave—sensors). A wearer may

FIG. 65 above, *whisper[s]*, 2003–2005



configure their "plugout components" to "vibrate, tickle, or sigh" when they receive data associated with a particular pattern set (Kozel and Schiphorst 2002).<sup>14</sup>

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Bachelard could have been reflecting upon a poetics of affective computing when he wrote that we are "half open" beings in that we want to be "both visible and hidden," and because our "movements of opening and closing are so numerous, so frequently inverted, and so charged with hesitation" (1969, 222). The inversions, the hesitations, the desire to be secret and then to reveal: these motivate the choreography of the self and can inspire the design of wearable devices. The affect in affective computing begins with emotions, and sometimes with other ambiguous body states, but spirals outward into the domain of social choreography. Redefining affect, or at least providing multiple definitions, is important in order to promote the design of a broader range of computational systems, wearable or not. Affect is not just mood: happy, sad, angry, lustful. It reflects an ontological state. Diprose's Merleau-Pontian inspired understanding of affect sees it as an acknowledgment of our being embedded in the fabric of the world alongside others. It is "the expressive operation of a body that knows nothing of a division between self and world or between the expression and what is expressed" (2002, 101). Suddenly, affectivity is more about intercorporeality than the identification of a mood with an individual, and we find ourselves in the "pulp of the sensible," in which what is indefinable "is nothing else than the union in it of the 'inside' with the 'outside,' the contact in thickness of self with self" (Merleau-Ponty 1968, 268). And of selves with other selves.

FIG. 66 above, *whisper[s]*, 2003-2005



## CONJUNCTIVE TISSUE OF VISCERALITY

288 The *whisper[s]* project has had three iterations, each with slightly different user interface, hardware and software platforms, and garment design.<sup>15</sup> The participatory installation format of each public exhibition did not rely on performers but invited members of the public to don garments embedded with small wireless computers and pulse and respiration sensors. Once dressed, participants entered a space defined by light, sound, and movement. As people accessed their own breath and heart data through simple gestures and sent this data out into the space as mathematical visualizations, or "gave" this data to another person, relationships were revealed: between self and self, self and other, and self and ecosystem. The *whisper[s]* installations were unusual because they immersed people in environments affording them the choice to externalize and communicate their internal flows and rhythms—something normally done in private or without this degree of conscious awareness. The qualities of attention and affect exhibited by participants wearing the garments as they grasped the physical and conceptual elements of the pieces were palpable. It was as if people listened to, and interacted with, their own bodies and the bodies of others in entirely new ways. Bodies were revealed across a pattern of human relationships where wider relationships were based on the initial discovery of a relationship between the self and one's own hidden layers of meaning.<sup>16</sup>

The gestural vocabulary around accessing the data for the first version of *whisper[s]*, called *whisper*, was shaped by a less than desirable design prototype. The jacket-shaped garment had snap connectors located on fingertips and these connectors had to be joined with snap islands on the



The red dress a fortiori holds with all its fibers onto the fabric of the visible, and thereby onto a fabric of invisible being.

—MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

garment, or on someone else's garment, in order to close a circuit and select one of a range of choices: breath, heart, or a combination of heart and breath. The decision to give data was enacted by snapping onto someone else's garment; it was impossible to take another's data because the system was designed to prevent this. The data was obtained by medical sensors embedded in the garments (a breath band around the rib cage and a pulse sensor on a fingertip) and, in turn, was transmitted by a custom-constructed Bluetooth wireless device embedded in the garment to a server that housed the database of mathematical visualizations. The visualizations were then projected into video pools in the space, shifting in real time according to the patterns of the breath and heart rate of one or more people. Looking at the visualizations of participants' bodies was strangely intimate, and once again the uncanny way responsive performances using digital media have of providing physical examples of philosophical concepts was evident. Luce Irigaray writes of the "conjunctive tissue of visibility" based on the visual becoming visceral. The space of the installation felt like a collective fabric, with each person's gaze seeming to be "a connective tissue between the interior and the exterior, but formed inside... formed within the living tissue of my body" (Irigaray 1993, 156-157).

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This first design was less than desirable because the garments and their interface were distinctly nonsensual: they looked like lab coats and the gestural vocabulary to emerge from the necessity of snapping into place to get the system to respond was fussy and disjointed. The second iteration



290 of *whisper[s]* was called *between bodies* in order to give awareness of the thickness of space and ambiguity of meaning of intercorporeal space. Both men and women were invited to put on lush and eccentric skirts embedded with small fans and vibrators such as those embedded in mobile phones. Garter belts under the skirts read muscle contraction and caused the muscular movement of one person to animate the fans and vibrators in the skirt of another person, or of a group of people. The decision to focus on tactile or haptic outputs was born of an awareness that the visualization of body data output of the first version of *whisper[s]* somehow limited the gestural and imaginative interaction. We needed to escape the visual in order to enhance the kinaesthetic and tactile, to draw people into different qualities of awareness that did not privilege vision. By focusing on the tactile we created a shared experience that was far more playful than the first iteration of *whisper[s]*. This could be due to the collective wearing of skirts and the social connotations around vibrators, but there was something about the immediate physicality of wearing motion from the body of another on one's skin that drew the interactions into another dimension. As Irigaray says, the tangible is a vast landscape that cannot be enclosed in a map; it is "the matter and memory of all the sensible" (1993, 164).

The relationship between oneself and one's own physiological data, the self-to-self relation, was the first revealed once participants put on the garments. There was a delicate listening quality to the first few gestures that made connection with the locations on the body that caused an individual's

FIG. 67 above, *whisper[s]*, 2003

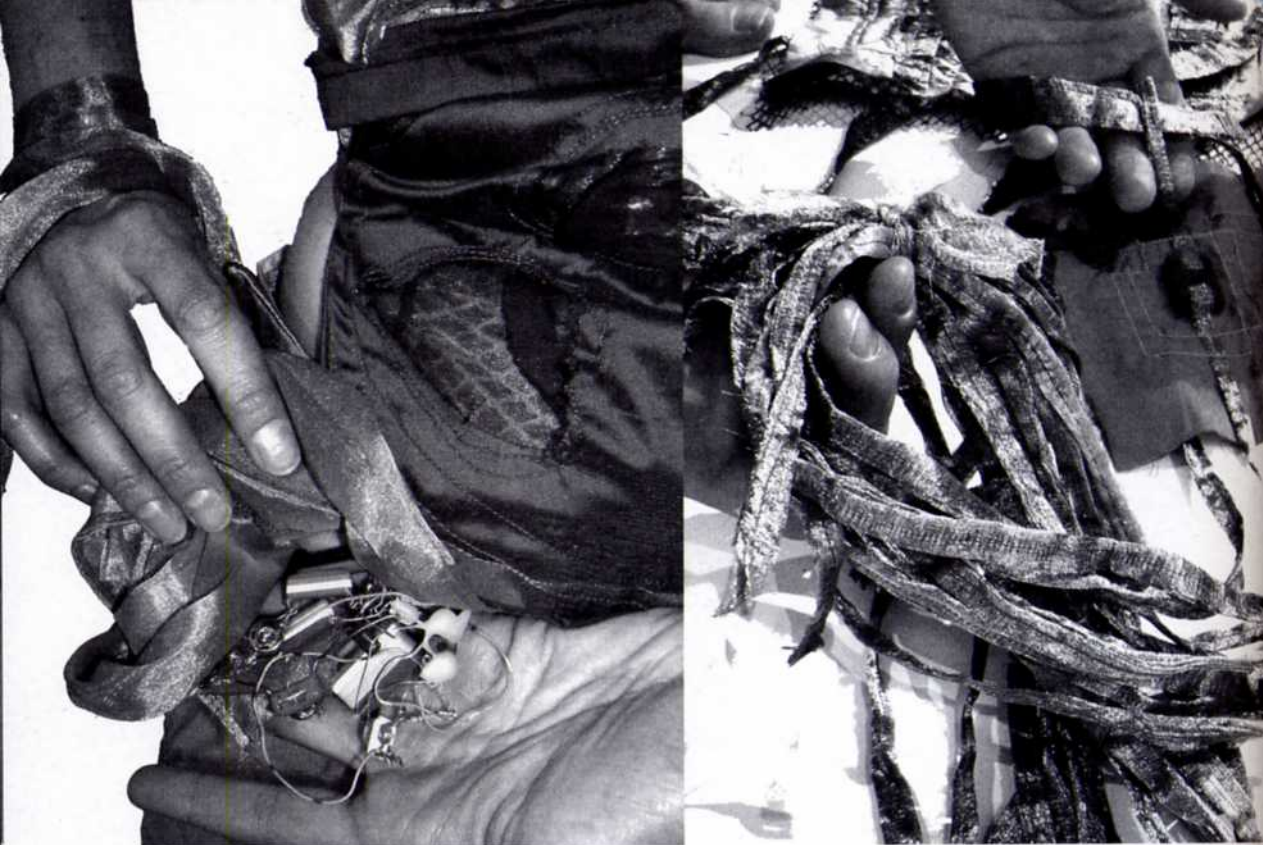


heart, breath, or combined heart and breath to be projected outward. Hesitant, listening: it was like discovering the self anew, entering into a gestural dance with one's own body in order to access things that were intimately familiar but strange at the same time. Then the moment of registering the connection between the behavior of the visualizations projected in the space and the motion of deeper layers of the body was palpable, with some people even articulating aloud: "that's me." The relationship between self and self was fundamental to the experience because it set in place new modalities of attention and intention with respect to one's own body: a state of listening or attending to the biological and affective flows of one's body preceded the intention to share these with another body or map them into the space. In this respect it is evident that performance practices and other physical techniques lie at the very heart of this project, for the shift of state of attention to the body and space through breath and focus are fundamental to dance, yoga, meditation, and other intuitive or expressive physical techniques. Like an archaeology, layers that were concealed rose to the surface through the gestures and attentive practices of the *whisper[s]* project, but there was never an imperative for all the hidden depths to be exposed fully. A dynamic akin to Merleau-Ponty's visible and invisible was at play in the way that dimensions of a person's physiological data were rendered visible, but the full richness of the body was left in an implicit or immanent state. Merleau-Ponty indicates that modes of exhibition of sound and of touch have points of intersection with the visible world but remain in the disguise, or in the secrecy of the invisible. He suggests that this is how touch and music, along with literature and love, exist for us in the sensible world.

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FIG. 68 above, *whisper[s]*, 2003





292 The second relationship to be revealed was that between self and other. It was clear that the act of giving physiological data to someone meant different things to different people. Some people were fundamentally uncomfortable with the procedure and chose to remain engaged with exploring their own data. Some people only engaged with the friends with whom they entered the installation, while others quite happily regarded all participants (up to eight at a time) as worthy of exchange. It was imperative for us, the authors and guides of the installation, to create a safe habitat for experimentation: we referred to what we created as an ecosystem. In Heideggerian terms it can be seen as a place of *techne*, of bringing forth, and it reflects the sense of technology providing an "enframing" for being (Heidegger 1977, 20). The ecosystemic nature of the piece, reflected by the third relationship to be revealed, that between self and ecosystem, became clear through the amalgam of relationships evident when the space as a whole was observed. Participants visiting the space entered a community of bodies and objects whose functionalities were not yet manifested. They were invited to take their place within this ecosystem and create the relationships. People, garments, pulses, breath, muscles, visualizations, and haptics and sound became a shifting, complex system. Elements of collective vocabulary emerged from the design of both systems: with *whisper[s]*, reaching and wrapping arm gestures, looking down at the floor, embraces and slow traversals of the space prevailed; with *between bodies*, crouching, hands pressing onto the sides of thighs, brushing up against others, and gazes shared between individuals were more in evidence. Yet both systems afforded the scope for individual choice to create a counterpoint within the



tendencies of the whole, such as the choice to run, to connect several beings into one creature, to sit or lie on the floor, to remain completely still. These ecosystems were fundamentally social, and the gestural vocabularies to emerge can be considered social choreographies.

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FIG. 71 above, *whisper[s]*, 2003–2005

## A FORCE FIELD OF POSITIONS

294 Pursuing the suggestion that wearables enable a dissemination of immanence by means of intention and attention, the question becomes whether wearables converge with locative media once immanent states radiate outward into shared social spaces. Once the ebb and flow of personal information are mediated by portable, location-aware technologies, like mobile phones, GPS, and Bluetooth, the argument that wearable computing becomes another strand of locative media and open-source digital architectures confronts the argument that it is more accurate to construe wearables as a distinct domain. Drew Hemment calls locative media a "'test category' for the convergence of geographical and data space," and "a prescient metaphor for the latest technological zeitgeist." While he and other artists and researchers working in this area recognize that locative media can be broadly understood to include "bodily, technological and cultural components, combining cultural practices and the embodiment of the user, with various 'media' and location sensing technologies" (Hement 2006), there is still a fascination with dissolving the materiality of bodies, cities, and structures into fluctuations and permutations of socially generated digital data. Locative media is a creative morph of cartography and geography with digital imagery and database programming, piggybacking on mobile networking technologies, and many of the more compelling projects exhibit a political spirit of social activism and situationist art revised for the new century.<sup>17</sup> As Sally Jane Norman points out, much locative media art enacted in social contexts borders on the subversive or illegal and is interwoven with well-articulated political or ideological agendas. This constitutes a huge part of its appeal and allows it to be placed within a history of theatrical practices (Norman 2006).



An architecture that is created by people through its use, as a performance, a conversation, a bodystorm.

—USMAN HAQUE, "The Choreography of Sensations"

A pivot in the discourse is Ben Russell's iconic, and often cited, poeticism that with locative media it might be possible to "search for sadness in New York" (1999). A highly personal, highly collective emotion, sadness can be seen to hang in spaces, to shift like clouds, and to infect people. Even animals can exude sadness, so why could we not find techniques to map it, or browse for it like we might for un-password-protected WiFi bubbles in cities we visit for the first time? Sadness is placeless and amorphous, but it is also deeply embodied. Russell's take on locative media is pivotal because he sees it as virtual at the same time as physical, and as viewed from the outside at the same time as subjectively experienced. This second designation is important because it reflects the focus of this chapter: not only an emphasis on data choreography as social computing, but also on the phenomenological (or heterophenomenological) perspectives that consider locative media from a particular approach to bodily affect and immanent states. It already is not uncommon to find designers and writers deploying the terms *performance* and *choreography* to distinguish their perspective from more static and less embodied approaches to media. Architect Usman Haque's poetic and articulate essays on open-source architecture integrated with participatory architectural structures rely heavily on the fluid dynamics of choreography. He writes of "choreographies for openness," in a way that applies extraordinarily well to the social ecosystem of the *whisper[s]* project, indicating that these require "group instructions . . . interpreted and modified as necessary by participants, individually or collectively," and further, that participatory or interactive systems encourage a constructed project "to be constantly 'patched' or 'performed'" (Haque 2004a).



296 Assuming a readership of architects, visual artists, programmers, and designers, Haque's words seem constructed strategically both to provoke and to inspire, and his writing, like Russell's, has the feel of a contemporary manifesto: "Architectural design, the choreography of sensations, can provide meta-programs within which people construct their own programs" (ibid.), and as such it "changes over time and *responds* to changes over time" (Haque 2004b).

Complementing the sensory perspectives of Russell and Haque is a more intensely phenomenological stance, taking into account the experience of locative media from the first-person perspective, and expanding a notion of affect from the inside out. This shift to a more fully phenomenological perspective from one that sensitively identifies sensation from the outside can be clarified by returning once again to Merleau-Ponty. He writes of how, for the one who experiences colors and textures of the world, the space and time of things are "shreds of himself, of his own spatialization, of his own temporalization, are no longer a multiplicity of individuals synchronically and diachronically distributed, but a relief of the simultaneous and of the successive, a spatial and temporal pulp where the individuals are formed by differentiation" (Merleau-Ponty 1968, 114). This passage, sometimes isolated to demonstrate a profound solipsism, is really an indication of the tenacity to which Merleau-Ponty holds onto the phenomenological position by which the choreography of sensations that is the world can only be experienced and understood through the body of the one embedded and perceiving, not by an external choreographer.<sup>18</sup> When this is combined with a





deeper understanding of affect, such as the one offered by a Deleuzian reading of Spinoza, the bridge between locative media and wearables can be further strengthened. 297

Spinoza offers a "physics of bodies in which the human body is not a self-contained whole but is built out of other bodies with our own" (Amin and Thrift 2002, 84). Affect takes into account the alchemy of other bodies with our own, and make us more intensely aware of our own "desires, joys and pains" (Gatens and Lloyd 1999, 14). Affects are passions for Spinoza, including hatred, love, sadness, joy, anger and envy. As a subclass of bodily "affections," affects involve increases or decreases in the body's power of acting, and, most significant for this discussion of locative media, affect refers to the passage of the body from one state to another as the body lives and acts in the world (Lloyd 2004, 72). Affects are states of transition and can be viewed, like data choreography previously articulated, as transubstantiations. Affects from the past also live in our bodies as traces of encounters with others. An affect implies the presence of the affecting one or ones. What is noteworthy here, apart from affects being bodily states and transitions, is that they are inherently social. Amin and Thrift, geographers proposing a sophisticated articulation of cities as performative spaces, indicate that affect provides an "artful dimension to interaction," taking into account body stance, corporeal social logic, and improvisation (2002, 87). Like Diprose, but using different terms, affect is located in the interaction between bodies in social contexts. Affect acts as a "temporary flesh for the passage to an altered state of social being" (Katz 1999, 343). The significance

FIGS. 74, 75 above, *whisper[s]*, 2003-2005



of affect not being simply reduced to emotion should be clear by now. Construing it dynamically as a transition and socially as the relations between bodies means that affect can be viewed from the outside as fascinating patterns in space and time, or it can be reflected upon from within, in an attempt to palpate immanence from within.<sup>19</sup>

As compelling as Amin and Thrift's discussion of affect in cities may be, they do not associate it with wearables. For them, wearable computing is located in the domain of simple flow of information in a city that is ultimately disembodied. Relying on a definition provided by Donald Norman, they situate wearables within a computational and functional domain that includes ubiquitous computing, indicating that the key application for so many of our mobile devices is a diary, and, more controversially, suggest that these devices and systems mimic human bodies and simulate affect (Amin and Thrift 2002, 102-103). We might legitimately ask whether affect is simulated by our wearables and our locative media devices that reflect patterns of social behavior, or whether "real" affect is conveyed or represented by them. Diprose helps us escape this conundrum by suggesting that affectivity, like sexuality, is "an amplification of tensions, resonances and metamorphoses" that take place in the intercorporeal world of perception (2002, 103). Returning once more to the suggestion that we might be able to search for sadness in New York, affect can be regarded as so tangible, so searchable, that it appears as a "new term" between oneself and the world, a "new texture in the social moment," which has the qualities of an emergent and transforming body (Katz 1999, 343). If devices are inserted into this intercorporeal world, they enhance the amplification process. They do not insert affect where none existed before, but they participate in a city that, made up of people and devices, becomes "a force field of passions that associate and pulse bodies in particular ways" (Amin and Thrift 2002, 84).

The view of affect as referring to a passage from one state to another can be mapped onto mobile, locative media as they encourage or inhibit human exchanges. They are fluid, they are portable, they accompany us for hours, days, and seasons, which means they span moods and activities, cycles and rhythms of life. We integrate these little devices into our clothing (pockets and bags) and our daily gestures include the arm, head, and spine movements associated with using them. We walk and see differently when we use them. Even with something as basic and ubiquitous as a mobile phone, our senses are repatterned, our feeling for space and time folds inward or leaps outward. We carry the other with us, in our hearts, in our memories, in our devices. It is not at all surprising that the researchers and designers active in this area struggle to find vocabulary to describe what

is happening, not at all surprising that they stumble across terms that are intimate to dance and theater: performance, choreography, and improvisation. The question of whether wearables can be associated with locative media is less pernicious once the terms of the discussion are taken to a deeper level of affect. The *whisper[s]* installations were designed to be landscapes of emanations from a multiplicity of people and devices. Deleuze's reflections on Spinoza help reinforce a notion of social computing that permits an attention to immanence *at the same time* as an understanding of social choreographies. Relations can compound "to form a new, more 'extensive' relation," such as many people using mobile devices in a single city, but something else may occur: "capacities can compound directly to constitute a more 'intense' capacity or power," such as the principle of telepathy upon which *whisper[s]* is based. Reflecting a Spinozan notion that a body can be anything from an animal, to a body of sounds, to a collectivity, Deleuze reminds us that "it is no longer a matter of utilizations or captures, but of sociabilities and communities" (1988, 126).

# THE ABJECT: "DUCTE CLOSE"

300 With *whisper[s]* we send the body out into networked space, funneling the body through one or more of its physiological data sources. Is this not similar to what Deleuze sees in Francis Bacon's painting when, in *The Logic of Sensation* (2004), he describes the mouth as the organ through which the body escapes? The mouth "is no longer a particular organ, but the hole through which the entire body escapes and from which the flesh descends." Are we letting the body escape from itself through one of its organs, leaving ourselves with nothing but "the immense pity that the meat evokes"? (Deleuze 2004, 26).

This seemingly abrupt shift of tone from quiet optimism, or even utopianism, to intimations of the abject is required to complete the journey of closeness, and to truly embed Merleau-Ponty's understanding of reversibility in contemporary technologized bodies. As indicated earlier, the *whisper[s]* wearables do not mimic or simulate affect: these expansions of corporeality operate like a Bacon painting according to a fidelity to materiality, or at least to meat. "The body must return to the material structure and dissipate into it, thereby passing through or into these prostheses-instruments, which constitute passages and states that are real, physical, and effective, and which are sensations and not imaginings" (ibid., 18-19). Wearables will always bump into the abject by virtue of their seeming like prostheses, even if beautiful or seductive prostheses. And of course there is the question of pain, discussed previously in chapter 4 on motion capture, but here it is relevant again in the acrobatics of immanent states performed by the *whisper[s]* devices: "Meat is not dead flesh, it retains all the sufferings and assumes all the colors of living flesh. It manifests such convul-



Yes or no: do we have a body—that is, not a permanent object of thought, but a flesh that suffers when it is wounded, hands that touch?

—MAURICE MERLEAU-PONTY, *The Visible and the Invisible*

sive pain and vulnerability, but also such delightful invention, color, and acrobatics" (ibid., 23). It is important to retain the full sensory range of flesh, important not to fall into old philosophical habits of abstraction, and one way of doing this is to recognize the inextricability of flesh from pain. Donna Haraway, despite confronting and overcoming abjection by celebrating the merging of bodies with machines in her cyborg manifesto, never loses sight of pain. She allows for the conceptual status of flesh by indicating that it is "no more a thing than a gene is," but she insists that flesh "always includes the tones of intimacy, of body, of bleeding, of suffering, of juiciness... one cannot use the word flesh without understanding vulnerability and pain" (Haraway 2000, 86). Flesh, she writes, is "always somehow wet," evoking the viscosity of the abject body vividly tattooed on the cultural imaginary by Julia Kristeva's *Powers of Horror* (1982).

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Is it cynical to locate artistic and research projects in the vulnerable areas of human intimacy, physiological functioning, and expression of deep affect? Intimacy is linked with vulnerability, and pain is only a heartbeat behind. Wearables are extraordinary, because once the initial euphoria or fetishization exhausts itself, several competing notions of abjection jostle with each other. There is the classical abject of literature and cinema as manifested by cyborgs and robots, by Mary Shelley's *Frankenstein* and the notion of a body that is no longer pure or purely human by virtue of being monstrous (Shelley 1993; Balsamo 1999; Orlan 2004). There is the abject of artists, philosophers, and literary theorists from the 1980s and 1990s of bodily fluids such as piss, shit, vomit, and decay,



302 and liminal states of hallucination and annihilation that exist outside language, at the borders of discursive and visual representation (Kristeva 1982; Irigaray, 1985; Butler, 1993; Lyotard 1993).<sup>20</sup> There is the political equivalent of the abject that encompasses those who challenge the smooth functioning of society, such as the homeless, ill, disabled, criminal, or insane (Foucault 1995, 2003). None of these versions of the abject are proposed here for wearables, although these devices and systems are proximate with the first. A new potential for abjection woven into the fabric of wearables was captured by art historian Susan Ryan when she asked, "Do wearable technologies offer us new opportunities or are they just corporate branding in drag?" (2004). Is this the abject as it pertains to wearables—consumerism, surveillance, control? Nigel Thrift illustrates in very clear terms how "affect has become part of a reflexive loop which allows more and more sophisticated interventions in various registers of urban life." Systematic knowledge pertaining to the manipulation of affect are deployed knowingly and with political intent, and we construe affect as warm and cuddly at our peril: its uses can be "downright scary" (Thrift 2003, 58). We are a generation of Franksteins, and the convergence of the corporeal with the machinic no longer frightens us. The abject is now more subtle. It has become affective and relates to the digital hole through which the body escapes and what happens to it once it has undergone its transubstantiations.

The abject lies there . . . "quite close," and its proximity to *whisper[s]* can be revealed by relating several stories of how the project "beseeches, worries, and fascinates desire" (Kristeva 1982, 1).

FIG. 76 above, *whisper[s]*, 2003–2005





The most general fears expressed by people participating in the installations related to whether their body data would be held somewhere, enabling faceless entities, like banks, insurance companies, security agencies, or even telemarketers, to recognize them. The *whisper[s]* devices sense and transmit data, but as of now they do not record physiological data. This would be to cross a significant threshold. The notion of recording personal data left people with a fear of where it might end up, who might access it, and what it might reveal. There were worries over how it might be used, or abused, and the social and corporeal implications of this. The abject became the potential for corporealities to be located and identified by corporations, for physical bodies to be subsumed by corporate bodies or an extended military corpus. Even further, it became the prospect of their bodies being deformed, misappropriated, or misrepresented in databases and, like identity theft, coming back to haunt them in social and political reality. "Like an inescapable boomerang," Kristeva writes, the one haunted by the abject is placed "literally beside himself" (1982, 1). A discursive fracas at a workshop on physiological computing associated with a SIGCHI (Special Interest Group in Computer Human Interaction) conference confronted this question of the ownership of, and access to, body data from a different perspective.<sup>21</sup> After Thecla Schiphorst and I completed our presentation of the *whisper[s]* project, we were met with silence on the part of some of the medical researchers in the room. Echoing the "How dare you?" question discussed in chapter 2 pertaining to the choice of a dancer to speak for herself, a similar "How dare you?" was posed, implying that we were inexcusably irresponsible for letting people have access to information about the functioning



of their own heart and lungs. This knowledge was perceived to be the domain of medical professionals, and we were warned in no uncertain terms that people might fear for their lives if presented with information on their own bodies. The physiological data was effectively framed as abject, and as such it needed to be "radically excluded" from the knowledge of the very person from whom it was drawn. The exposure of the person to her data could only enhance her fragility and draw her to a place where meaning collapses and her body, somehow, becomes a breath or two closer to being a corpse (Kristeva 1982, 2-3). Of course it was easy for Schiphorst and me to respond to this provocation from feminist and Foucauldian positions concerning the right to access and own the means of controlling our bodies, but this rebuttal sidestepped the presence of the abject at the center of this debate. It was less interesting to refute the position than to recognize the fears upon which it was based. The seeming paternalism of the medical professionals was actually reinforced by a young woman who echoed the sentiment when she explained her refusal to participate in the project on the grounds that she "wanted to have a baby one day" and did not want any unpleasant surprises. She did not want access to her physiological data, even artistic extrapolations of it. Mortality loomed once again, as did pain and vulnerability.

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Key system design decisions for the transfer of data through the wearables platform remain contentious and unsettled among the *whisper[s]* artists, and equally contentious among the public who participate in the installations. Seemingly trivial, these decisions relate to whether the system is designed for a person to give or to receive data. If I desire to give you my data, I initiate this action by choosing you and deciding to give you my breath, or heart, or a combination of the two. The reverse can also be programmed into the system. I may decide to receive data from you, to approach you and listen to your body; but this action, which can be construed as my adopting a generous state of receptivity to your corporeality, can also be the equivalent of my taking your data—walking up to you and extracting it. Many participants in the installations were uneasy over the thought that someone could approach them and take their body from them. Once again, Deleuze's interpretation of Bacon's paintings as depicting the body escaping through the "hole" of one of its organs is disturbingly appropriate: participants were afraid that their body might be taken from them, as if another could come up to them and puncture a hole in their skin and extract their breath or heart. Generosity of affect becomes abject cruelty. Or simply abjection.

The *whisper[s]* project, and many computational systems dealing with physiological data or flesh, reveal that beauty and abjection are, in the words of Merleau-Ponty, the obverse and the reverse of one another.

The act of offering one's body data in a state of openness combines the *activity* of giving with the *passivity* of having something taken. This echoes the famous seeing-seen reversible dynamic according to which I am both subject and object, but the application of this to physiological data to the immanent states of the body adds an edge of abjection to the dynamic. I wear others but am worn by others: the wearing-worn. The stakes are higher, and messier. The potential for risk is no longer simply being seen alongside objects, but also of having your affective or physiological states viewed, controlled, disseminated, or extracted. As indicated previously, the intensification brought to the reversible dynamic by wearable computing is significant to complete the journey of this Merleau-Pontian-inspired approach to bodies and technologies. The abject is close to the body. It is no more or less close to bodies that converge with technologies, but perhaps it is harder to overlook. Saying that the abject converges with the beautiful according to the familiar dynamic of reversibility is important for two reasons: it offers a more subtle yet pervasive sense of abjection, and it addresses the concern that Merleau-Ponty is simply a philosopher of the beautiful. As discussed in chapter 4, his luxuriant prose, his celebration of the loss of self in the beauty of a landscape, in a pool surrounded by cypresses, or in an enchanted state of floating in the world with another body, make some critics worry that his thought cannot take into account the less pleasant realities of contemporary life, or account, quite simply for the disruption provided by otherness.<sup>22</sup> In previous chapters I have demonstrated the tensions, disequilibrium, and absence inherent to his dynamic understanding of the body in the world, but here the concern is simply with revealing that the relation between the abject and the beautiful can also be construed according to the dynamic of reversibility. Researching, designing, and participating in the social choreographies offered by the *whisper[s]* project revealed this.

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The subtlety of the abject is that it is not simply a state of quasi-horror and destitution. As Kristeva writes, desire and intense pleasure (*jouissance*) also reside in abjection. The vitality of abjection was conveyed wonderfully by a phenomenological observation from someone exposed to the *whisper[s]* project for the first time. A woman in the final stages of sex reassignment therapy, from a man's body to a woman's, indicated that the information she most wanted to sense and transmit to her loved ones was the fluctuating and transforming state of her hormones. She asked if such a sensor could be built into the *whisper[s]* platform, a hormonal sensor, but also a monitor of the wavering state of her liminality between male and female. She provided a corporeal ground for Kristeva's location of the abject on "the edge of non-existence and hallucination, of a reality that, if I acknowledge it, annihilates me. There, abject and abjection are my safeguards" (Kristeva 1982, 2). If the *whisper[s]* devices could be seen to be sensors and transmitters of the abject, they could become this woman's safeguards, assurance that her new reality was not disappearing or becoming entirely virtual and ungrounded in flesh.

## CLOSING

306 Spiky political questions lend research into wearable computing layers of shadow and darkness to throw into relief the sense that *whisper[s]* was a pretty project, conceived by women artists with histories in dance, who want to create a way for people to touch each other, but only to play in the pleasurable or gently erotic region of the sensory spectrum. It cannot be assumed that a project that seems to be beautiful is without abjection or corporeal, aesthetic, and political controversy. So much political control is enacted upon bodies. So much Western consumerism is directed at bodies. And, as computers become mobile and miniaturized, they are less directed at offices and minds, but are pointed at bodies, dangled in front of us until we thirst to touch the latest mobile phone or for the look and performance of the newest generation iPod or gaming console. It is known that bodies are the site of colonization, and the site of resistance. It is also known that bodies are the sites of difference and diversity, of pain and pleasure. What remains underexplored is the extent to which performative acts of sharing the body through our digital devices may allow us to construct collaboratively new physical states or states of conscious awareness. Is this fluffy girl art? Perhaps, but there might be claws and teeth beneath the fluff, or just a creeping sense of unease combined with an alternative political agenda.

Of course, women artists and researchers are by no means the only ones to emphasize corporeality, performance, introspection, affect, softness, beauty, intimacy, touch, play, textiles, movement, flirtation, or ambiguity of meaning in the context of technologies. And, of course, the objectives



of physical or performative computing are not just the creation of sensory or sensual experiences. What we construct with our digital devices are identities and differences. These flow beyond the moment of exchange with the digital data and are carried with us. The body has an extraordinary capacity to retain traces, and knowledge and actions are shaped in part by these traces. 307

The research and performance emerging from all of the systems in this book—telematics, responsive architectures, motion capture, and wearables—reveal that, just like in life, relationships unfold in diverse directions: toward banality, detachment, control, play, generosity, secrecy, hesitation, exuberance. Revealing and becoming are not static states; they morph, and embodiment brings forth, or reveals, the many subtle transitions of daily life. Each of these computational systems is extraordinarily rich for performance research precisely because they can let emerge latencies within us, levels of intuition and affect, that animate us as human beings. The methodologies of phenomenology and performance help to enhance these latencies. With careful—even sensitive—design, future generations of these systems and devices can expand our social, physical, and emotional exchanges.

Perhaps, in the end, the title of this book, *Closer*, is less a reflection of Merleau-Ponty's philosophy than it is of Joy Division's album of 1980 by the same name. The entwinement between beauty and abjection are immortalized by Ian Curtis's words: "love, love will tear us apart ... again."







# NOTES

## CHAPTER 1 PERFORMING PHENOMENOLOGY

- 310 1. The reference in this paragraph is not only to my own approach to phenomenology but also to a broader orientation to embodiment and thought that is evident in the work of other writers and artists. Some are integrated into the discussion in the following chapters, such as Rosalyn Diprose, Elizabeth Grosz, Don Ihde, Luce Irigaray, Iris Marion Young, Francisco Varela, Eleanor Rosch, and Evan Thompson (the last three refer to their work as a "new lineage of descent" from Merleau-Ponty; Varela, Thompson, and Rosch 1993, xvii). There are others, too, who have developed innovative phenomenological approaches to art, sciences, and the wider world whom I acknowledge but have not cited extensively in this book, including Sondra Fraleigh (1987), Stanton Garner (1994), Drew Leder (1990), Laura Marks (2000, 2002), Glen Mazis (2002), James Richard Mensch (2001), Philip Rothfield (2005), Vivian Sobchak (2004), Cathryn Vasseleu (1998), as well as artists Char Davies, Diane Gromala, Gretchen Schiller, and Thecla Schiphorst.
2. One of Cytowic's patients did not want to be tested by the technologies used to study synesthesia because he was afraid that the results would indicate that what he had experienced for a lifetime was not real (Cytowic 1995, 91). See <http://psyche.cs.monash.edu.au/v2/psyche-2-10-cytowic.html> (accessed October 2006).
3. This is by no means a new tension. Benedict Spinoza, writing in the seventeenth century, the age of Descartes, reduces neither body to mind nor mind to body and as such awards the apprehension of body from a first-person perspective the same importance as scientific facts grasped from a third-person perspective: "Indeed, Spinoza seems to see the scientific knowledge of body through reason as developing out of, rather than radically opposed to, the direct awareness of body through sense and imagination" (Lloyd 2004, 53).
4. I am grateful to Laura Marks for her views on the critiques of existential phenomenology.
5. I will refer to phenomenology as a first-person approach because it respects the experience of the subject and permits the use of the subjective voice and the personal pronoun "I" within academic discourse. The designations first-, second-, and third-person methodological approaches are outlined with clarity and pertinence by Varela and Shear (2002).

6. For an extensive study of physical intelligence and structures of knowledge and skills, both recognized and contentious, see Murphy 1992.
7. I benefited from conversations with registered massage therapist Dayna Anchel on the functioning of fascia based on her interpretations of therapeutic manuals and her experience as a practitioner.
8. It was suggested to me by one of the reviewers of this manuscript that immunofluorescence tagging and other more complex forms of visualization might be able to visualize connective tissue. I welcome this information given that most of the images reproduced in medical texts are from tissue removed from bodies that are no longer living or are artists' impressions (Myers 2001).
9. The following series of instructions was drafted as conceptual guidelines for final-year undergraduate and master's degree students. The guidelines informed practice in studios and exchanges between the students.
10. Deleuze writes that "great philosophers are also great stylists" (1995, 164). Style relates to voice; it encompasses vocabulary and the inventing of new words, but it is also about syntax, which, in Deleuze's words, "strains toward the movement of concepts."
11. By French feminists I refer to a diverse group of women writing across philosophy, literature, and psychoanalysis, a far from comprehensive list that includes Luce Irigaray, Julia Kristeva, Hélène Cixous, Marguerite Duras, Monique Wittig, and Michelle LeDoeuff. See Marks and de Courtivron 1986 for an overview.
12. This notion of many differences within men and women, differences other than simply female from male, opened up by Irigaray's approach to sexual difference is particularly important given that sexual difference according to Lacan was much more narrowly construed. Mitchell and Rose explain that with Lacan it is "not that anatomical difference *is* sexual difference... but that anatomical difference comes to figure sexual difference; it becomes the sole representative of what that difference is allowed to be" (1990, 42).
13. For an overview of the sex/gender debate as it permeated feminist, philosophical, and political discourse in the

latter part of the twentieth century, see Chanter's excellent overview of Irigaray's philosophy (1995). For an indication of many approaches to sexual difference in reflections on bodies and technologies, see Balsamo 1996, 1999; Braidotti 2006; Haraway 1991 and 1997; Ihde 2002; Plant 1997; Stone 1995. It is worth calling attention to Don Ihde's contribution, for it is a phenomenology from a male perspective responding to Susan Bordo's complaint that men rarely interrogate themselves as men. Ihde expands his assertion that "unqualified binaries are for simpletons," noting that there are "essentialist and nonessentialist functional equivalents within both the biologically determinable and the socially constructed versions of the discussion" (2002, 16, 30-31).

14. Seduced and Abandoned: The Body in Virtual Reality was the title of a conference at London's Institute for Contemporary Art (ICA) in 1994. It was part of an influential series of conferences at the ICA in the 1990s addressing advancements in "virtual" or digital technologies plus the cultural, artistic, social, and political implications.

15. I use the term *virtual* loosely. Most of the performative engagements with responsive technologies in the 1990s (including telematics, motion capture, computer vision) did not involve true virtual reality systems, but could better be described as augmented reality. My limited experience with full VR (such as a cave with projections on all walls, floor, and ceiling, combined with use of goggles and glove interface) did, however, leave me aware of my body as the interface rather than dissolving my corporeality. Others, such as Char Davies (2003), have written and researched more extensively in this area. The view of the virtual and virtuality that motivates this book is elaborated in the last section of this chapter.

16. See Thrift 2000, 2003; Amin and Thrift 2002; and Massey 2003. The view that all acts, not just a range of acts, need to be regarded as performative according to newer approaches to geography and cities was affirmed by Finnish geographer Jussi Jauhiainen after his keynote address on "Geopolitics of Urban Landscape and Technologization" at the International Symposium on Electronic Art (ISEA) in 2004.

17. I use the words *dance* and *performance* almost interchangeably in this book. For the most part dance is assumed to fall into the broader category of performance. Occasionally dance is used to indicate an increased level of physical articulation that comes from the experience of training in and performing specific dance techniques or vocabularies, but for the most part *performance* is a preferable term. This is not because I believe my work to fall into the category of performance art, but because the movement I have developed in conjunction with a wide range of computer systems diverges from specified techniques and approaches the zone of improvisation that dance shares with theater and music. Performance implies a degree of physical flexibility and responsivity that is more appropriate to describe the work.

18. Mihaly Csikszentmihalyi's (1990) idea of flow seems to be a popular notion in current human-computer interaction (HCI) circles. This is a good starting point, and will most likely be deepened and expanded as literature on performance, philosophies of embodiment, and other embodied practices, such as meditation, further infiltrates the world of design. It is worth recalling that this state of flow has a history in existential philosophy, with Martin Heidegger's distinction between "present-at-hand" and "ready-to-hand" (Heidegger 1988) and before him Nietzsche's more complex and parodic account of Zarathustra, nicely described by Diprose (2002).

19. This relates strongly to Varela, Thompson, and Rosch's (1993) argument for a fragmented, nonunified, or decentered self in the convergence they chart between phenomenology and the Buddhist tradition of philosophy and meditative practices as applied to the field of cognitive science.



## CHAPTER 2

## TELEMATICS: EXTENDING BODIES

20. This section contains excerpts from a longer essay on Heidegger and *techne* (see Kozel 2006a).
21. Luce Irigaray has indicated that the mediation of the instrument is a technique and the impact is to separate the subject from the object under investigation: "A process of moving away and delegating power to something that intervenes between the universe observed and the observing subject" (1993, 122). While the association of technique with instrumentality is a valid concern, I suggest that it is possible to have a more Merleau-Pontian understanding of techniques wherein there is a play across subject and object, between the "seeing and the seen."
22. For a related overview of the virtual and virtuality in the form of a contribution to a lexicon of performance, see Kozel 2007a.
23. Many philosophers have written with intelligence and sensitivity about the virtual, and while it is obvious that I cannot cite them all in such a short section, it would be remiss not to mention Brian Massumi's "Parables of the Virtual," a sophisticated rendering of the virtual through Bergson and Deleuze. Beginning by calling our attention to our own bodies and the "intrinsic connection between movement and sensation," he asserts that "nothing is more destructive for the thinking and the imagining of the virtual than equating it with the digital" (2002, 137).
24. Laura Marks (2000, 2002) has done this effectively with her phenomenological and multisensory readings of film and video. See also Sobchack 2000, Sobchack 2004, and Morse 1998.
1. This essay has been widely published. It first appeared in a London dance publication called *Dance Theatre Journal* (Autumn 1994), accepted by an editor named Chris De Marigny who decided to take a chance on an unknown author writing on a peculiar topic. He has since passed away, but I wish to acknowledge him for granting me the space to speak and move in his pages.
2. For more details on Paul Sermon's work, see <http://www.paulsermon.org>. *Telematic Dreaming* was one of many pieces in the exhibition *Ik + de Ander* (I and the Other), curated by Jeanne van Heeswijk and Ine Gevers at the Beurs van Berlage, Amsterdam, June 16–August 14, 1994.
3. This section was first published in the *Swedish Journal of Film Studies, Aura, filmvetenskaplig tidskrift* (April 1998): 83–90. The *Ghosts and Astronauts* team was made up of Jonny Clark (music), Ruth Gibson (performance), Guy Hilton (networking), Anne Holst (performance), Susan Kozel (performance, choreography), Dominique Rivoal (cameras), and Gretchen Schiller (digital choreography). The *Digital Dancing* series of workshops occurred in London in the late 1990s and were creative interdisciplinary hothouses with an emphasis on drawing dancers and choreographers into contact with digital technologies and digital artists. They were produced by Illuminations Interactive (directed by Terry Braun, with Suzanne Kelly and Henry Johnson). *Ghosts and Astronauts* was part of the 1997 workshop.
4. It is worth noting that at this time I was concerned with addressing Virilio's assertion that virtuality necessitated a loss of materiality. It took me a few more years to fully take into account the more sophisticated critique of it as a loss of the relation with the other. The later chapters in this book, written almost ten years after this section, take questions of alterity (of "autrui") into account.
5. CU-SeeMe is no longer available. Many other low-bandwidth free videoconferencing software platforms exist, but these are rarely as grainy due to advancements in Web camera quality and to the proliferation of DSL or

faster bandwidth options. We used a dialup connection combined with a very slow DSL link, resulting in an uneven exchange of data between theaters.

6. *Multi-Medea: Exiles* was part of the Electronic Cabaret of the Body Electric electronic art festival (May 1997) in Vancouver, Canada. A link was made between Vancouver at midnight, where I was, and London at dawn, where Ruth Gibson performed at the other end of the connection.
7. V2, an artists collective and significant force in producing and disseminating innovation in digital art located in Rotterdam (Holland), introduced the term *unstable media* to describe artistic uses of digital technologies. See <http://www.V2.nl>.
8. I am grateful to Kitsou Dubois for an illuminating discussion, as well as the opportunity to see video documentation of both her parabolic flights and the performance she choreographed as a result of her research. See Dubois 1996.
9. Michel Bernard (1995) and Godard (1994) both reference synesthesia in the context of dance; see also Cytowic's major work on synesthesia from a scientific perspective (1995).
10. Kozel 1997a contains a condensed version of the first part of this chapter. The series of *Multi-Medea* performances (five including *Shrinkspace*) were part of a larger research project entitled *Electromythologies* (1996-1997).
11. Giedion is an unlikely interlocutor for my ideas: for the most part, he is highly conventional, yet he offers occasional prophetic moments such as the assertion that the "newest" stage of sculpture (beginning circa 1910) worked toward the dematerialization of solid volumes, so that solid and void, inside and outside, could be seen to flow into one another (Giedion 1962, 494-525).
12. The item e-content was a buzzword and a target for funding by consortia linking government agencies and telecommunications industries from 2001 to 2004 (particularly in Canada). "Content" was the theme of the 1997 ISEA (International Symposium of Electronic Art) and was the theme for SIGGRAPH (Association for Computing Machinery's Special Interest Group on Graphics and Interactive Techniques) in 1994. Obviously the issue cannot be easily or quickly resolved. For a discussion of the danger of using new technologies to tell "old stories ... about the gendered, race-marked body," see Balsamo 1996 (132).
13. Bachelard cites this "first myth," then airs his concern that "the dialectics of here and there has been promoted to the rank of an absolutism" with "costly" effects. *The Poetics of Space* is sympathetic to experimentations across spatial materialities (1969, 212).
14. For a pertinent reading of myths, see Pile 1996 (118).
15. Elsewhere I have suggested that *Multi-Medea* is a hacker. See Kozel 1998c.
16. For a summary of the debate around the conflict versus compatibility of phenomenology and semiotics, see Garner 1994.
17. Prior to the era of Internet jargon, Carlton Dallery translated Merleau-Ponty's word *l'acis* as network. What was an awkward translation in 1964 gains new relevance with shifting sociocultural contexts (Merleau-Ponty 1964a, 184).
18. The *Liftlink* team consisted of Jonny Clark, Ruth Gibson, Guy Hilton, Susan Kozel, Annie Lok, Dominique Rivoal, Sterling Steward, and Kirk Woolford. It was a joint commission among the South East Dance Agency, Zap Productions, and Lighthouse.
19. The following section is an extract and a modification of a keynote presentation to the Nordic Dance Forum (NOFOD), January 2006. For the full text, see Kozel 2006b.

20. This statement is from personal email correspondence with the editor.
21. Of course there are wonderful examples of dancers writing for themselves and publishers providing the means for them to do so. Notable creative memoirs of performance or autobiographies include Rainer 2006, Tharp 1993, and Hay 1994, and for personal voices of dancers expanding academic and/or aesthetic discourse see Foster 1996, Fraleigh 1987, Blom and Chaplin 1988, and Tufnell and Crickmay 1990.
22. The Extended Body course was offered first as a pilot in 2001, co-directed by Lizbeth Goodman and myself in conjunction with the Institute for New Media Performance Research (INMPR), the Department of Dance Studies, and the Department of Theatre of the University of Surrey, U.K. The bundle of software that it comprised evolved into the SMARTshell (Kozel, Goodman, and Milton 2005).
23. The workshops were called Confronting Distance/Crafting Proximity (2001-2002). Funded under the ANNIE project (Accessing and Networking with National and International Expertise) in the U.K., and coordinated by Mark Childs and Paul Rae, these were fairly short learning experiments. They spanned three to four weeks and utilized the best practice guidelines and the iVisit component of SMARTshell. See Childs and Dempster 2003 for an account of the broader initiative.
24. John Durham Peters, in his essay on rethinking the conceptions of mass and interpersonal communication, titled "The Gaps of Which Communication is Made," has written of similar qualities in the act of conversation (1994).
25. iVisit security is an important issue, and it became essential for us to use password-protected private folders (which we called rooms) for our workshops. Students expressed feelings of vulnerability and even sexual harassment when using the unsecured portions of the iVisit site. There are a large number of men with webcams and without clothes loitering expectantly in some sections of the iVisit community, but like any open forum there are also many interesting artistic, social, or educational sections. The creators of iVisit have taken considerable steps to create a safe and secure platform that still remains free enough from host control to be open to diversity.
26. We benefited tremendously by having Katherine Milton on our team of developers. She developed the template for these discussion procedures based on extensive online educational experience in a university arts and humanities context.
27. Curiously, audio proved to be distracting within an artistic telematics context, too. In a 1994 conversation, Paul Sermon informed me that an early version of *Telematic Dreaming* attempted to connect gallery visitors through audio as well as visuals with the disappointing result that people stopped moving and treated the installation as an elaborate telephone. They were much more expressive physically and gesturally when linked with visuals alone.
28. A longer phenomenological reflection of the stages of visual disengagement from a system through rehearsal process can be found on my Web site; see "crossing/dwelling HNY/P.S.1" (<http://www.meshperformance.org>).
29. The participants of the workshop included master's degree dance students from De Montfort University: Marie Hay, Sarah Parker, Jennifer Burke, and Deborah Norris. Michael Huxley was the professor of the course Embodiment, Experience and Performance that hosted the workshop. Participants from the Warwick University workshops, who appear in the images but not the chat, include Charlotte Field, Susie Bond, Megan Paul, Katie Miles, Shelley Ayliffe, Patrick Duggan, Alison Ward, Katriona Hillerton, Sarah Hutchinson, Katherine Morse, and Laura Stevens.



### CHAPTER 3

#### RESPONSIVE ARCHITECTURES: AN EMBODIED POETICS

1. See chapter 1 for a discussion of *techne* and technique.
2. *Room with a View* was an ongoing series of installations occurring in and around the wooden Room designed by Jeanne van Heeswijk. Each time the Room was set up, it addressed a different theme and involved a collaborator or collaborators from a specific discipline or walk of life. For more information, see <http://www.jeanneworks.net>.
3. A curious problem arose in writing this section. I had more difficulty focusing on time over space (which of course can never be entirely separated) once collectivity was introduced. Could there be something about the pervasive and resilient quality of public space that refuses to let itself be swallowed up by formalistic and abstract considerations of time, underlining once more the need to rework conceptions of time?
- 316 4. *trajets* was developed as a co-commission with the Banff Centre in 2000. It was created by a collaborative team including Gretchen Schiller and Susan Kozel (codirection, concept, movement, video), Robb Lovell (software and movement), Scott Wilson (software), Jonny Clark (music), Shaun Roth and Kari Kimura (architecture), and Pablo Mochcovsky (electronics). It completed a tour of England in 2002 and has shown in Denmark, Germany, and France. It is in the process of revision and expansion for a tour of Spain and southern Europe. The discussion in this chapter is based on experiences of the tour of the first, smaller version with some references to the new responsive systems and interactivity being developed for the upcoming version.
5. See Kozel 1997b for an earlier essay on phenomenological poetics focusing on Merleau-Ponty's ideas of formlessness, disequilibrium, and reversibility, but as yet with no explicit reference to responsiveness.
6. A significant difference between Laurel's approach and the one offered in this book, apart from her emphasis on Aristotle's poetics, is her indication that art is an "external representation of things that happen in the head of the artist." This classically inspired distinction between reality and representation, according to which the latter "is not the same as real life" but has "real world effects or consequences," is not consistent with a phenomenological approach that makes no such distinction (Laurel 1993, 30–31).
7. See Laura Marks's book *Touch* (2002) for a highly embodied account of what she calls "sensuous theory and multi-sensory media," pertaining to experimental film and video.
8. In a discussion on Merleau-Ponty and Deleuze at the first meeting of the Workshop in Radical Empiricism in Montreal in 2006, Erin Manning and Brian Massumi suggested that those who "fall in love with Deleuze" often had a previous "affair with Merleau-Ponty," particularly the late phase of his writing (<http://www.radicalempricism.org>).
9. Mayer, in his essay "Computer-mediated Interactivity: A Social Semiotic Perspective" (1998), considers the transformation of social structures alongside the shift in how we interface with technologies. While not exactly a poetics, he situates interactivity strongly in a social context. The Computational Poetics group at Simon Fraser University (Martin Gottfrit, Kenneth Newby, and Aleksandra Dulic) explored the poetics through computer programming in art, resulting in a conference in 2006.
10. In *How We Became Posthuman*, Hayles contrasts the liberal humanist subject with the fluid and creative potential of the posthuman subject. The subject of liberal humanism is based upon the construction of "a coherent, rational self, the right of that self to autonomy and freedom, and a sense of agency linked with a belief in enlightened self-interest," but ensuing problems include "the tendency to use the plural to give voice to a privileged few while presuming to speak for everyone; the masking of deep structural

inequalities by enfranchising some while others remain excluded; and the complicity of the speaker in capitalist imperialism, a complicity that his rhetorical practices are designed to veil or obscure" (Hayles 1999, 86-87).

11. I am reminded of an excellent book on musicology by Susan McClary (1991) in which she exposed the bias toward calling weak orchestral endings "feminine." I wonder if we run the risk of inadvertently reproducing a similar gender bias if we construct interactive systems around a notion of "hard" and decisive subjectivity, and responsive systems around hesitancy and reworkings of the subject in terms of more fluid embodiment. I think it is important to be aware of the implicit gender associations without being prescriptive. There is no doubt that this book speaks of embodied, sometimes overtly sensual work for the most part from the phenomenological perspective of a woman dancer. Does this, therefore, mean it is good or bad to associate responsivity with the feminine and interactivity with the masculine? The postfeminist in me wants to be clear that I am aware that women exhibit hard subjectivity and men soft circular corporeity according to choice, but the French feminist in me wants to be contrary and to suggest that what is needed is a correction to the balance and that this book speaks from the perspective of a woman's flesh. I am not a believer in the essential feminine or masculine, but I am frequently dismayed by bumping into, more often than I like to admit, gender stereotypes that I thought we had left behind decades ago. That they exist is less of a problem than a seeming lack of awareness that when they are encountered they represent stereotypes. A sort of hyper-reflection is once again called for. If we choose to deliberately enact stereotypes, some indication that we are consciously and possibly even performatively doing so is desired.
12. In 1757 David Hume in the *Natural History of Religion* wrote of a "universal tendency among mankind to conceive all beings like themselves.... We find human faces in the moon, armies in the clouds." See Hume 1993.
13. In her Ph.D. thesis for the University of Plymouth (U.K.) Gretchen Schiller examined *trajets* in terms of the kinesic field (Schiller 2003).
14. The choreographic system animating *trajets* is a separate area of research in itself that Schiller and I have called *passus*. For an initial sketch of its characteristics, see Kozel and Schiller 2006.
15. I have never pursued the potential therapeutic applications of interactive or responsive media performances, but surprisingly often I have been approached by members of the public who indicate that they feel the work has potential in broadly construed therapeutic contexts, from psychology to physiotherapy. It has been suggested that *Telematic Dreaming* might help people receive intimate gestures safely; *trajets* might provide a healing or meditative environment; *whisper[s]* might offer varied benefits of enhanced personal and physical awareness.
16. See the chapter entitled "Cyberspace, Virtuality and the Real" in Grosz 2001 for an embodied and relational account of cyberspace and VR.

## CHAPTER 4

### MOTION CAPTURE: PERFORMING ALTERITY

1. Sections of this chapter contain material reworked from previously published essays including "infinitesimal clouds of electric charge": A-Life Approached through Interactive Live Performance (2000a); "Revealing Practices: Heidegger's *Techné* Interpreted through Performance in Responsive Systems" (2006a); "Ghostcatching: More Perspectives on Captured Motion" (1999); and "Marionettes and Dancers: Dance and Digital Technologies" (1998a).
  2. Critchley indicates that this is a formulation of Levinas's adopted by Maurice Blanchot: the ethical relation to the other "can only be totalized by falsely imagining oneself occupying some God-like position outside of the relation" (2002a: 15). It is an indication that ethics is based on a dynamic of immanence.
  3. Postman citing Goodman on morality and technology. Note that a distinction is made in this chapter between moral philosophy and ethics.
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4. Much as I dislike the distinction between Anglo-American philosophy and Continental philosophy, occasionally it is useful for indicating broad orientations in issues and methods. The Markkula Center for Applied Ethics at Santa Clara University is a good example of a strong Anglo-American approach to ethics. See <http://www.scu.edu/ethics/>.
  5. Peggy Phelan's discussion of the unmarked is relevant but would take this discussion into a different direction. It is worth reflecting on how contemporary political and physical conceptions of being marked or unmarked maps onto ideas of the visible and invisible (1993).
  6. The approach to animism in this chapter is not technological animism according to which technologies are seen as having "purposes" of their own rather than fulfilling purely technical functions. Self-perpetuating and self-expanding, they are seen to be out of human control and antipathetic to human beings.
  7. The Merleau-Pontian position is to be distinguished from ethical sentientism. Endorsed by ecophilosophers intending to avoid the instrumentalist approach to the nonhuman world, sentience, even at a rudimentary level such as that of amoeba or plants seeking pleasurable states and avoiding unpleasurable ones, is seen to be sufficient to merit moral consideration. See Fox 1990.
  8. Anthropocentrism follows a technocratic ideology because it assumes that man is supremely able to understand and to control events to suit his purposes; he is at the center of all. Technocentrism is both a fetishization of technology and a view of the world through a technocratic paradigm according to which the world and everything in it is manipulated and controlled for human benefit by breaking it down into replaceable, interchangeable parts as if it were a machine (Fox 1990, 29).
  9. The event was called *Future Moves* (1996) and coordinated by Dick Hollander of the Lantaren-Fenster Theatre (Rotterdam, Holland). The event created an alliance with MOTEK Motion Capture Studio in Amsterdam. Immediate collaborators for this performance experiment included Kirk Woolford and Thecla Schiphorst.
  10. The event was called *Real Gestures, Virtual Environments* and coordinated by Sally Jane Norman, occurring between the Institut International de la Marionette (Charleville-Mézières, France) and the Zentrum für Kunst und Medientechnologie (ZKM, Karlsruhe, Germany). Immediate collaborators for this performance experiment included Kirk Woolford, Micha Hoch, and Gisèle Vienne.
  11. Reversibility was discussed from different perspectives in the chapters on telematics (emphasizing extension) and on installation (elaborating a poetics of responsivity). Here reversibility will be evaluated in an ethical context. There is some debate in philosophical communities over whether Merleau-Ponty's reversibility is adequate to account for an ethical relation; see Lefort 1990 and Dillon 1990.



12. Rosalyn Diprose's sensitively constructed corporeal ethics based on intercorporeality and generosity plays an important role in this chapter, acting as a contemporary interpretation of Merleau-Ponty and Levinas's writings. She integrates their work into a treatise on social justice and transformation. She does not explicitly refer to technologies, but in many ways the philosophical impetus of our projects are complementary (Diprose 2002).
13. *Ghostcatching* opened in January 1999 at the Cooper Union School of Art in New York City. Eshkar and Kaiser of Riverbed also collaborated with Merce Cunningham on two pieces, *Hand Drawn Spaces* (1998) and *Biped* (2000).
14. *Swithering* means to suffer indecision or doubt and is the title of a collection of poetry by Robin Robertson (2006).
15. It must be acknowledged that one of the most tirelessly innovative choreographers in this field is Merce Cunningham. Born in 1919, he is an example of how innovation is less about age than about willingness to experiment.
16. Some philosophers believe that Merleau-Ponty's attempt to construct a new ontology, an intra-ontology according to Moran, was unsuccessful because he was unable to articulate it fully prior to his death, and they indicate that his working notes remain too cryptic to construct a workable ontology. Cryptic is an elastic designation: to one person baffling, to another rich with interpretative space (Moran 2000, 429).
17. It is worth recognizing that at the time of Merleau-Ponty's writing the term *virtual* bore no connection with technologies, but an argument can be made for conceiving the virtual/digital self as latent and porous, like the virtual self in syncretic sociability.
18. *Contours* (1999-2000) was an interdisciplinary collaboration codirected by Susan Kozel and Kirk Woolford, with Ruth Gibson and Sarah Lloyd (performance), Jonathan Clark (music), Horatio Monteverde (architecture), and Leon Cullinane (installation). It was sponsored by the Arts Council of England, South East Dance Agency, South East Arts, the University of Surrey (U.K.), and Dance Screen 99 (Köln).
19. Elizabeth Groz, Rosalyn Diprose, Dermot Moran, and Gary Brent Madison, to name a few, believe he adequately accounts for otherness, while Luce Irigaray, Claude Lefort, and Emmanuel Levinas believe he does not. Even Merleau-Ponty expresses reservations regarding the overarching influence of the subjective consciousness in his early work, believing his later work makes up for these shortcomings. In previous writing I expressed concerns that he did not go far enough with notions of disequilibrium to account for dance and expressed reservations regarding the dynamic of reversibility and to a lesser extent the scope for alterity (Kozel 1994).
20. For Levinas ethics resides outside of logic, language, and being, hence the title of one of his major writings, *Otherwise than Being or Beyond Essence* (2002). Critchley writes of Levinas, "Strictly speaking, ethical discourse is nonsense, but it is serious nonsense" (Critchley 2002a, 19).
21. *Techne* is discussed in chapter 1, and a longer consideration of Heidegger's *techne* understood phenomenologically through performance in responsive environments can be found in Kozel 2006.
22. The artistic team for *immanence* included Robb Lovell (software and digital media design), Jamie Griffiths (visual and interaction design), Tara Cheyenne Friedenberg (performance), Helen Terry (performance), Jonathan Clark (music), and Susan Kozel (concept, artistic direction, performance). It was a commission for the HTMiles Festival in 2005, hosted by Studio XX of Montreal, and supported by the Canada Council for the Arts, the Interactivity Lab of Simon Fraser University, Mesh Performance Practices, and Primal Divine Productions.

23. Francisco Varela bases an approach to ethics on complementary notions of the virtual self as "selfless" in that it is an emergent pattern that has coherence but no center. We are not "top-down" directed entities; instead, we live across constant shifts in our microidentities: "This skillful approach to living is based on a pragmatics of transformation that demands nothing less than a moment-to-moment awareness of the virtual nature of our selves" (1999, 75).
24. The software used for this real-time modification is called *Isadora*, created by Mark Coniglio of Troika Ranch. It is a sophisticated tool for manipulation of real-time video imagery designed specifically for dance. See <http://www.troikatronix.com>.
25. Appreciation goes to Erin Manning for making clear the power of anticipation by means of a movement improvisation. The force of anticipation was so powerful as to exert a "push" that could almost topple us from a standing position. The performative philosophical workshop, *Dancing the Virtual*, directed by Erin Manning and Brian Massumi (Montreal, 2006) provided a unique opportunity to embody philosophical thought around virtuality. For formulations of "feedforward," see Godard 1994 and Berthoz 1997.
26. There is considerable debate in the philosophical community over whether various ethical paradigms apply to human-animal relations. See Llewelyn 1991 and Turner 2003 for two views on Levinasian ethics and animals.
27. *figments* was commissioned by Lighthouse and BNL of Brighton (U.K.) as part of Event Coast. It was located at University College Chichester during September-October 1999 and was funded by the UK National Lottery. Imagery and motion capture system construction by Kirk Woolford, design by Leon Cullinane and Susan Kozel, performance by Susan Kozel, Ruth Gibson, and invited guests, and original musical composition by Hertz.
28. The tracking system modules were the Martin Lighting Director invented by Will Bauer in 1987 as a gesture input device for MIDI sound control by performers. It was then called the Gesture and Media System (GAMS). The tracker was further developed by Bauer in conjunction with Rafael Lozano-Hemmer and other engineers and was licensed by Martin Professional of Denmark to be used as a lighting controller for automatic followspots. The support and information provided by Lozano-Hemmer and Bauer for this experiment were much appreciated.
29. Credit goes to Kirk Woolford, my principal collaborator on this project, for the ingenious and ambitious decision to build the ultrasonic system. This was an example of hacker ethic translated into the context of live dance performance, something that happens a lot but is not often acknowledged by hacker and media art communities largely due to different circles of dissemination for the work and for the writing.
30. Margaret Boden's approach offers more philosophical depth than most A-Life writing, and acknowledges that there is no universally agreed-upon definition of life. The cluster of properties she offers may be, as she says, philosophically problematic, but at least they are dynamic and corporeal: "self-organization, emergence, autonomy, growth, development, reproduction, evolution, adaptation, responsiveness, and metabolism" (Boden 1996, 1). For longer considerations of *figments* through the rubric of A-Life, see Kozel 2000a, 2000b.
31. The more I learned of A-Life research from the 1970s to 1990s, the more I came to agree with Claus Emmeche's wry observation: "Artificial life does not have very many mothers; perhaps women may not have quite the same aspirations since their relation to the creation of real life is better grounded in personally embodied experience" (Emmeche 1994, 50). I acknowledge that the field is changing and spawning hybrid offspring with biotech and bio art. I look forward to seeing where it goes.

## CHAPTER 5

## WEARABLES: THE FLESH OF SOCIAL COMPUTING

1. For examples of research in bio art involving living tissues, genetic modifications, and biomechanic constructions, see the work by Guy Ben-Ary, Oron Catts, and Ionat Zurr of the SymbioticA Lab; artists Natalie Jeremijenko, Eduardo Kac, Jennifer Willet, and Shawn Bailey. For examples of an artistic deployment of surgery to critique cultural attitudes toward the body and technologies, see Orlan 2004. The performance art world has an established tradition of body art practices including body modifications, piercings, and endurance art (including Franco B and Stelarc's earlier work). Stelarc slides across bio art, with his second ear and swallowed sculptures and wearables, with his third arm. Obviously the line between bio art and wearables is fuzzy, but for the purposes of the discussion in this chapter bio art opens the skin to let materials or fluids out or in, while wearables are worn on the skin.
2. Scholars researching the ethics and politics around medical visualization and control of medical reproductive technologies and techniques have addressed these issues for decades. Anyone working in the area of design, aesthetics, and performance around wearables benefits from being aware of these discussions (Corea 1985; Stafford 1993; Haraway 1997; Petchesky 2000; Shildrick and Mykitiuk 2005).
3. The *whisper[s]* research group (<http://www.whisper.ia.sfu.ca>) consists of Thecla Schiphorst (direction, concept, performance and interaction design), Sang Mah (creative coordination and system development direction), Susan Kozel (concept, movement, performance and interaction design), Robb Lovell (software and media design, system integration), Jan Erkku (hardware design), Norm Jaffe (software design), and Calvin Chow (hardware design), and is based out of the Interactivity Lab of the School of Interactive Arts at Simon Fraser University in Canada. The 2003 version of *whisper[s]* also had garment and interaction design by Kristina Andersen, mathematical visualizations by Julie Tolmie, and sound composition by Laetitia Sonami. The 2004–2005 versions had garments designed by Gretchen Elsener, electronics by Pablo Mochcovsky, and further research and exhibition support by Camille Baker. *whisper[s]* was supported by the Shinkansen's Future Physical initiative and the V2 research lab (with Stock on hardware design). Further support came from the Daniel Langlois Foundation, CANARIE, the Canada Council for the Arts, the BC Arts Council, ASI Advanced Systems Institute, and the SFU Interactivity Lab.
4. Researching this section in the British Library in July 2005 just after the London bombings, I was chilled by the so-called stealth bills appearing in the British House of Commons, which would enact infringements to civil liberties in the name of security and the "war on terror." Emerging immediately after the bombings, these had obviously been under construction for some time. The national identity card scheme, which made so many members of the public and politicians uneasy, resurfaced, combined with a plan to instigate draconian new immigration legislation that called for biometrically tagging new Muslim immigrants and workers in Britain, only allowing refugees five-year time frames before having to be vetted once more, increasing resources devoted to policing, and infiltrating communities with officially sanctioned informers. It will not be long before many Western countries will hold records of DNA and medical data not only for their own citizens but also for those who visit the country as tourists, or certainly those who may be deemed terrorists or simply outside the mainstream.
5. Heterophenomenology is defined and explained in the first chapter. In brief, it is what can be called a second-person approach to reflecting upon lived experience. Instead of the phenomenologist directly reflecting upon her immediate experience, she reflects on the experiences of others but filters the descriptions through her own body. This is not a detached third-person approach; it attempts to respect the experience of the other as it resonates with personal experience or perceptual information or knowledge.
6. Locative media refers to location-aware mobile devices, such as mobile phones that utilize a range of location-sensing technologies: GPS, WiFi triangulation, WiFi and



Bluetooth XML feeds that broadcast location information, phone location finding, and conventional-current cell tower locating. On a practical level, a device can ascertain its position (and your position if you have the device with you) by multiple means, both indoors and outdoors, and to varying degrees of accuracy. On a poetic and artistic level it is possible to stitch together layers of media (such as sound and visuals) with the flows of people carrying devices, or to embed narratives in landscapes reflecting hidden histories or neglected sources of affect and meaning accessible by devices. See the *Leonardo Electronic Almanac* issue devoted to locative media: [http://leoalmanac.org/journal/vol\\_14/lea\\_v14\\_n03-04/](http://leoalmanac.org/journal/vol_14/lea_v14_n03-04/).

7. This is not a cultural anthropological approach to the use of mobile technologies. It is performative and philosophical, with the intention to impact upon the design of specific systems. Some good cultural and anthropological approaches to mobile phones exist. See Agar 2003 and Ito, Okabe, and Matsuda 2005.
8. This comes from a conversation with Godard at the 2007 "Recherches—En Danse" conference at Le Mas de la Danse, The Centre for Study and Research in Contemporary Dance located in Fontvieille, France, directed by Françoise et Dominique Dupuy. See <http://lemasdeladanse.com/fr.htm>.
9. This approach to the dynamics of data choreography has some affinity to the study of movement offered by the sociological approaches of kinesics and proxemics dating back to the 1960s. Parakinesics, in particular, is concerned with qualitative modifications of movement such as intensity, duration, extension, and interactions with others (Bernard 1995, 128). Michel Bernard has integrated a review of sociological approaches to movement in his book on corporeality. Rudolf von Laban also has complementary approaches to deepening the understanding of movement that have become quite popular in human-computer interaction (HCI) fields when taxonomies of movement are required to facilitate the writing of computer programs (Laban and Lawrence 1947; Laban 1966, 1992).
10. A range of artists over the years has explored telepathy or related states of awareness in the context of responsive systems. A highly limited sample includes Camille Baker, Diana Domingues, Diane Gromala, and Kathleen Rogers.
11. This approach came to the fore in the 1990s and still pervaded the human-computer interaction community in 2006 as evident by the papers on this topic given at SIGCHI 2006 in Montreal.
12. I can't provide his name, but in his opinion a different design approach is required in order to make wearable computers marketable in the worlds of fashion and smart objects. We do not simply want more of the same functions provided by existing devices all compiled into a comprehensive armor.
13. Caroline Evans, in her book on fashion at the end of the twentieth century, adopts a complementary metaphysical approach in her expansion of the standard categories of fashion criticism by reflecting on ontological states such as life, death, pain, cruelty, and haunting (2003).
14. At the time of writing, the *whisper[s]* platform had not achieved the full degree of functionality or configurability. Development issues relating to soft circuitry and power sources (small, long-life batteries), and the question of porting to a mobile phone platform, were being addressed. Questions of battery power and circuitry that can sustain multiple washing and folding of garments are significant. See work on electronic textiles and wearable technologies by Joanna Berzowska and collaborators Vincent Leclerc and Marcelo Coelho of XS Labs at <http://www.xslabs.net>.

15. The first iteration of the *whisper[s]* project was simply called *whisper* and was part of the Dutch Electronic Art Festival (DEAF03) in Rotterdam and of Future Physical in Cambridge, U.K. in 2003. This emerged from a residency with V2 coordinated by Anne Nigten with substantial valuable engineering input from Stock of the V2 Lab. The second iteration was called *between bodies* and premiered at the Ciber@rt festival in Bilbao, Spain (May 2004), with garments designed by Gretchen Elsener and experience design workshops facilitated by Camille Baker. The final iteration as I'm defining it here was called *ex-hale*, included in the *Emerging Technologies* exhibition at SIGGRAPH 2005 in Los Angeles. For related writing, see Schiphorst 2005 and Schiphorst and Andersen 2004.
16. Some of this section appears in an essay published in *Performance Research* in the context of a longer discussion on techne. See Kozel 2006a.
17. Leonardo Electronic Almanac 14, no. 3, offers not only a collection of essays on locative media but also an online curated Locative Media Gallery at <http://leoalmanac.org/gallery/index.asp>. ISEA 2006 (International Symposium of Electronic Art) and ZeroOne San Jose also exhibited a range of work relating to locative media and urban spaces; see <http://www.isea-web.org/> and <http://www.01sj.org/>.
18. Strictly speaking, even the heterophenomenological method I propose according to which an empathic outsider can translate another's phenomenological experience, is a deviation from a Merleau-Pontian approach. For many years I espoused a strict view that a phenomenology could only be performed by one person of their own experience, and not of another person's experience. I am grateful to Leena Rouhiainen for instigating a loosening of my position.
19. I accept that Spinoza's ethics, as indicated by Genevieve Lloyd, "has shown an extraordinary capacity to admit diametrically opposed readings" and am aware that this chapter offers just a brush with Spinoza's understanding of affect. This is the direction of a future project in performance and mobile technologies called "social choreographies" through which many of these ideas will be presented as more than what Deleuze refers to as sudden illuminations from Spinoza, like flashes, which are what this chapter contains (Deleuze 1988; Lloyd 2004). See <http://www.socialchoreographies.net>.
20. Artists Cindy Sherman, Andres Serrano, Annie Sprinkle, and Matthew Barney are known for producing abject work dealing with gender, sexuality, and perversion in the 1980s and 1990s.
21. Once more, as with note 12, I am not able to attribute the comments due to the protected nature of these conversations.
22. Recall also Irigaray's critique of Merleau-Ponty as offering a luxuriant solipsism, discussed in chapter 3. In previous writing I constructed a critique of Merleau-Ponty as a philosopher of the beautiful and attempted to extrapolate elements of his thought that pointed to a notion of the sublime in order to account for dance (Kozel 1994). With this book my position is somewhat revised. I see more light and dark in his writing and shift my focus to the abject body rather than the more elaborate notion of the sublime.

## TECHNOLOGICAL GEOGRAPHY

- 324 Agar, Jon. 2003. *Constant Touch: A Global History of the Mobile Phone*. Cambridge: Icon Books.
- Amin, Ash, and Nigel Thrift. 2002. *Cities: Reimagining the Urban*. Cambridge: Polity Press.
- Ansell Pearson, Keith. 2002. *Philosophy and the Adventure of the Virtual: Bergson and the Time of Life*. London and New York: Routledge.
- Aristotle. 1987. *Poetics*, trans. Richard Janko. Indianapolis and Cambridge: Hackett Publishing Company.
- Ascott, Roy. 2005. "Distance Makes the Art Grow Further: Distributed Authorship and Telematic Textuality in *La Plissure du Texte*." In *At a Distance: Precursors to Art and Activism on the Internet*, ed. A. Chandler and N. Neumark, 282-296. Cambridge, MA, and London: The MIT Press.
- Atwood, Margaret. 2001. "If You Can't Say Something Nice, Don't Say Anything at All." In *dropped threads, what we aren't told*, ed. Carol Shields and Marjorie Andersen, 133-148. Toronto: Vintage.
- Auslander, Philip. 1999. *Liveness: Performance in a Mediatized Culture*. London and New York: Routledge.
- Bachelard, Gaston. 1969. *The Poetics of Space*, trans. Maria Jola. Boston: Beacon Press.
- Ballard, J. G. 1992. "Project for a Glossary of the Twentieth Century." In *Incorporations*, ed. J. Crary and S. Kwinter, 268-279. Cambridge, MA: Zone Books; The MIT Press.
- Balsamo, Anne. 1996. *Technologies of the Gendered Body: Reading Cyborg Women*. Durham, NC, and London: Duke University Press.
- Balsamo, Anne. 1999. "Reading Cyborgs, Writing Feminism." In *Cybersexualities: A Reader on Feminist Theory, Cyborgs and Cyberspace*, ed. Jenny Wolmark, 145-156. Edinburgh: Edinburgh University Press.
- Banes, Sally. 1987. *Terpsichore in Sneakers: Post Modern Dance*. Middletown, CT: Wesleyan University Press.
- Barthes, Roland. 1982. *Camera Lucida*. London: Vintage.



Baudrillard, Jean. 2000. *The Vital Illusion*. New York: Columbia University Press.

Benvenuto, Bice, and Roger Kennedy. 1986. *The Works of Jacques Lacan: An Introduction*. London: Free Association Books.

Bernard, Michel. 1995. *Le corps*. Paris: Éditions du Seuil.

Berthoz, Alain. 1997. *Le sens du mouvement*. Paris: Éditions Emile Jacob.

Billington, R., S. Strawbridge, L. Greensides, and A. Fitzsimons. 1991. *Culture and Society*. London: Macmillan Press.

Blanchot, Maurice. 1993. *The Infinite Conversation*, trans. Susan Hanson. Minneapolis: The University of Minnesota Press.

Blom, L. A., and L. T. Chaplin. 1988. *The Moment of Movement: Dance Improvisation*. London: Dance Books.

Boden, Margaret A., ed. 1996. "Introduction." In *The Philosophy of Artificial Life*. Oxford: Oxford University Press.

Bohm, David. 2003. *The Essential David Bohm*, ed. Lee Nichol. London and New York: Routledge.

Braidotti, Rosi. 1994a. *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory*. New York: Columbia University Press.

Braidotti, Rosi. 1994b. "Of Bugs and Women: Irigaray and Deleuze on the Becoming-Woman." In *Engaging with Irigaray: Feminist Philosophy and Modern European Thought*, ed. Carolyn Burke, Naomi Schor, and Margaret Whitford, 111-137. New York: Columbia University Press.

Braidotti, Rosi. 2006. *Transpositions: On Nomadic Ethics*. Cambridge, UK, and Malden, MA: Polity Press.

Bunn, Austin. 1999. "Machine Age." *The Village Voice* (New York City), 12 January, p. 33.

Butler, Judith. 1988. "Performance Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory." *Theatre Journal* 40, no. 4 (December): 519-531.

Butler, Judith. 1990. *Gender Trouble: Feminism and the Subversion of Identity*. London and New York: Routledge.

Butler, Judith. 1993. *Bodies that Matter: On the Discursive Limits of Sex*. New York and London: Routledge.

Cannon, Walter B. 1932. *The Wisdom of the Body*. London: Kegan Paul, Trench, Trubner & Co.

Caporael, Linnda, and Cecilia Heyes. 1997. "Why Anthropomorphize?" In *Anthropomorphism, Anecdotes and Animals*, ed. R. W. Mitchell, N. S. Thompson, and H. L. Miles, 61-75. Albany: SUNY Press.

Capra, Fritjof. 1996. *The Web of Life: A New Scientific Understanding of Living Systems*. New York and Toronto: Anchor Books, Random House.

326 Chanter, Tina. 1995. *Ethics of Eros: Irigaray's Rewriting of the Philosophers*. London and New York: Routledge.

Childs, M., and J. Dempster. 2003. "Videoconferencing in Theatre and Performance Studies." In *International Review of Research in Open and Distance Learning* 4, no. 1 (April).

Cixous, Hélène. 1998. *First Days of the Year*, trans. Catherine MacGillivray. Minneapolis and London: University of Minnesota Press.

Corea, Gena. 1985. *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs*. New York: Harper and Row.

Crary, Jonathan. 1996. *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*. Cambridge, MA, and London: The MIT Press.

Crary, Jonathan. 2000. *Suspensions of Perception: Attention, Spectacle, and Modern Culture*. Cambridge, MA, and London: The MIT Press.

Crist, Eileen. 1999. *Images of Animals: Anthropomorphism and Animal Mind*. Philadelphia: Temple University Press.

Critchley, Simon. 2002a. "Introduction." In *The Cambridge Companion to Levinas*, ed. Simon Critchley and Robert Bernasconi. Cambridge: Cambridge University Press.

Critchley, Simon. 2002b. *On Humour*. London and New York: Routledge.

Csikszentmihalyi, Mihaly. 1990. *Flow: The Psychology of Optimal Experience*. New York: Harper and Row.

Cytowic, Richard. 1995. "Synesthesia: Phenomenology and Neuropsychology." *PSYCHE* 2, no. 10 (July): Available at <http://psyche.cs.monash.edu.au/v2/psyche-2-10-cytowic.html>.

Davies, Char. 2003. "Landscape, Earth, Body, Being, Space, and Time in the Immersive Virtual Environments Osmose and Ephémère." In *Women, Art, and Technology*, ed. Judy Malloy, 322-337. Cambridge, MA, and London: The MIT Press.

De Certeau, Michel. 1988a. *The Writing of History*. New York: Columbia University Press.

De Certeau, Michel. 1988b. *The Practice of Everyday Life*, trans. Steven Rendell. Berkeley: University of California Press.

deGraf, Brad, and Emre Yilmaz. 1999. "Puppetology: Science or Cult?" *Animation World Magazine* 3, no. 11 (February): 34-38.

De Lauretis, Teresa. 1987. *Technologies of Gender: Essays on Theory, Film, and Fiction*. Bloomington and Indianapolis: Indiana University Press.

- Deleuze, Gilles. 1988. *Spinoza: Practical Philosophy*, trans. Robert Hurley. San Francisco: City Lights.
- Deleuze, Gilles. 1991. *Bergsonism*, trans. Hugh Tomlinson and Barbara Habberjam. New York: Zone Books.
- Deleuze, Gilles. 1992. "Ethology: Spinoza and Us," in *Incorporations*, ed. J. Crary and S. Kwinter, 624-633. New York: Zone Books.
- Deleuze, Gilles. 1994. *Difference and Repetition*. London: Athlone.
- Deleuze, Gilles. 1995. *Negotiations*, trans. Martin Joughin. New York: Columbia University Press.
- Deleuze, Gilles. 2001. *Pure Immanence, Essays on a Life*, trans. Anne Boyman. New York: Zone Books.
- Deleuze, Gilles. 2004. *Francis Bacon: The Logic of Sensation*. London and New York: Continuum.
- Deleuze, Gilles, and Claire Parnet. 1996. "L'actuel et le virtuel" (annexe: ch. V), trans. Susan Kozel. In *Dialogues*. Paris: Flammarion.
- Dennett, Daniel. 1991. *Consciousness Explained*. New York: Little, Brown.
- Dillon, M. C. 1990. "Ecart: Reply to Claude Lefort's 'Flesh and Otherness.'" In *Ontology and Alterity in Merleau-Ponty*, ed. Galen A. Johnson and Michael B. Smith, 14-26. Evanston, IL: Northwestern University Press.
- Diprose, Rosalyn. 1994. *The Bodies of Women: Ethics, Embodiment and Sexual Difference*. London and New York: Routledge.
- Diprose, Rosalyn. 2002. *Corporeal Generosity: On Giving with Nietzsche, Merleau-Ponty, and Levinas*. Albany: SUNY Press.
- Dreyfus, Hubert L. 2001. *On the Internet*. London and New York: Routledge.
- Dubois, Kitsou. 1996. "Gravité zéro, une danseuse en apesanteur," in *Les actes du corps au corpus technologique*. Compte-rendu des interventions du mardi 13 février 1996, ed. S. Valax-Guedon. Blagnac: Odyssud-Blagnac.
- Eagleton, Terry. 2000. *The Idea of Culture*. Oxford: Blackwell Publishers.
- Eco, Umberto. 1986. *Travels in Hyperreality*. San Diego: Harcourt, Brace, Jovanovich.
- Emmeche, Claus. 1994. *The Garden in the Machine: The Emerging Science of Artificial Life*. Princeton, NJ: Princeton University Press.
- Evans, Caroline. 2003. *Fashion at the Edge: Spectacle, Modernity, Deathliness*. New Haven and London: Yale University Press.
- Foster, Susan Leigh. 1992. "Dancing Bodies," in *Incorporations*, ed. J. Crary and S. Kwinter, 480-495. New York: Zone Books.
- Foster, Susan Leigh, ed. 1995. *Choreographing History*. Bloomington and Indianapolis: Indiana University Press.
- Foster, Susan Leigh, ed. 1996. *Corporealities: Dancing Knowledge, Culture and Power*. London and New York: Routledge.



- Foucault, Michel. 1995. *Discipline and Punish*. New York: Vintage Books.
- Foucault, Michel. 2003. *The Birth of the Clinic*. London and New York: Routledge.
- Fox, Warwick. 1990. *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*. Boston and New York: New Science Library, Random House.
- Fraleigh, Sondra Horton. 1987. *Dance and the Lived Body: A Descriptive Aesthetics*. Pittsburgh, PA: University of Pittsburgh Press.
- Freud, Sigmund. 1964. *The Future of an Illusion*. New York: Norton and Co.
- Freud, Sigmund. 1987. *On Metapsychology: The Theory of Psychoanalysis*. Pelican Freud Library, vol. 11. Middlesex: Penguin Books.
- Garner, Stanton. 1994. *Bodied Spaces: Phenomenology and Performance in Contemporary Drama*. Ithaca, NY, and London: Cornell University Press.
- Gatens, Moira. 1996. *Imaginary Bodies: Ethics, Power and Corporeality*. London and New York: Routledge.
- Gatens, Moira. 1998. *Feminist Ethics*. Aldershot, UK: Ashgate/Dartmouth Publishing Ltd.
- Gatens, Moira, and Genevieve Lloyd. 1999. *Collective Imaginings: Spinoza Past and Present*. London and New York: Routledge.
- Gelernter, David. 1994. *The Muse in the Machine: Computerizing the Poetry of Human Thought*. New York: Maxwell Macmillan International.
- Gibson, William. 1984. *Neuromancer*. New York: Ace Books.
- Giedion, Sigfried. 1962. *The Eternal Present: The Beginnings of Art. A Contribution on Constancy and Change*. The A. W. Mellon Lectures in the Fine Arts, 1957. London: Oxford University Press.
- Gil, Jose. 2002. "The Dancer's Body." In *A Shock to Thought*, ed. Brian Massumi, 117-127. London and New York: Routledge.
- Godard, Hubert. 1994. "Entretien avec Hubert Godard, Le geste manquant." *Etats de Corps, Revue Internationale de Psychanalyse*, no. 5: 63-75. Ramonville Saint-Agne: Editions Erès.
- Goldberg, Ken, ed. 2001. *The Robot in the Garden: Telereobotics and Telepistemology in the Age of the Internet*. Cambridge, MA, and London: The MIT Press.
- Grosz, Elizabeth. 2001. *Architecture from the Outside: Essays on Virtual and Real Space*. Cambridge, MA, and London: The MIT Press.
- Guthrie, Stewart Elliott. 1997. "Anthropomorphism: A Definition and a Theory." In *Anthropomorphism, Anecdotes and Animals*, ed. R. W. Mitchell, N. S. Thompson, and H. L. Miles, 48-60. Albany: SUNY Press.
- Hall, Stuart. 1977. "Culture, the Media, and the 'Ideological Effect.'" In *Mass Communication and Society*, ed. J. Curran, M. Gurevitch, and J. Woollacott. London: Edwin Arnold.
- Haque, Usman. 2004a. "Hardspace, Softspace and the Possibilities of Open Source Architecture." In *NICEPAPER The Second Issue: Toward Copyright Free Culture*, ed. R. Smite, M. Tuters, and D. Silina, 4-5. Riga, Latvia: RIXC. Available at <http://rixc.lv/ram5>.
- Haque, Usman. 2004b. "The Choreography of Sensations: Three Case Studies of Responsive Environment Interfaces." Available at <http://www.haque.co.uk>.

Haraway, Donna. 1991. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." In *Simians, Cyborgs, and Women: The Reinvention of Nature*, 149-181. London and New York: Routledge.

Haraway, Donna. 1997. *Modest\_Witness@Second\_Millennium.FemaleMan@\_Meets\_OncoMouse™*. London and New York: Routledge.

Haraway, Donna. 2000. *How Like a Leaf*. An interview with Thyrza Nichols Goodeve. London and New York: Routledge.

Hay, Deborah. 1994. *Lamb at the Altar: The Story of a Dance*. Durham, NC, and London: Duke University Press.

Hayles, Katherine. 1999. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago and London: University of Chicago Press.

Heidegger, Martin. 1977. *The Question Concerning Technology and Other Essays*. New York: Harper & Row Publishers.

Heidegger, Martin. 1988. *Being and Time*, trans. John Macquarrie and Edward Robinson. Oxford: Basil Blackwell.

Hemment, Drew. 2006. "Locative Media." Guest editorial in *Leonardo Electronic Almanac* 14, no. 3. Issue on Locative Media. Available at [http://leoalmanac.org/journal/vol\\_14/lea\\_v14\\_n03-04/](http://leoalmanac.org/journal/vol_14/lea_v14_n03-04/).

Hume, David. 1993. *Principal Writings on Religion*, ed. J. C. A. Gaskin. Oxford: Oxford University Press.

Husserl, Edmund. 1970. "The Origin of Geometry." In *The Crisis of European Sciences and Transcendental Phenomenology*, trans. David Carr, 353-378. Evanston, IL: Northwestern University Press.

Husserl, Edmund. 1989. *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy*, Studies in the Phenomenology of Constitution, trans. R. Rojcewicz and A. Schuwer. Dordrecht, Boston, London: Kluwer Academic Publishers.

Ihde, Don. 2002. *Bodies in Technology*. Minneapolis: University of Minnesota Press.

Irigaray, Luce. 1985. *Speculum of the Other Woman*, trans. Gillian C. Gill. Ithaca, NY: Cornell University Press.

Irigaray, Luce. 1993. *An Ethics of Sexual Difference*, trans. Carolyn Burke and Gillian C. Gill. London: The Athlone Press.

Ito, Mizuko, Daisuke Okabe, and Misa Matsuda, eds. 2005. *Personal, Portable, Pedestrian: Mobile Phones in Japanese Life*. Cambridge, MA: The MIT Press.

Jameson, Fredric. 1999. "Time and the Concept of Modernity." In *Anytime*, ed. Cynthia C. Davidson, 208-217. Cambridge, MA, and London: The MIT Press.

Jencks, Charles. 1999. "Architectural Time—Between Melancholy and Narrative." In *Anytime*, ed. Cynthia C. Davidson, 176-191. Cambridge, MA, and London: The MIT Press.

Kant, Immanuel. 1987. *Critique of Judgment*, trans. Werner S. Pluhar. Indianapolis: Hackett Publishing Company.

Kant, Immanuel. 1998. *Critique of Pure Reason*, ed. Paul Guyer and Allen W. Wood. Cambridge, UK: Cambridge University Press.

Katz, J. 1999. *How Emotions Work*. Chicago and London: The University of Chicago Press.

Kearney, Richard. 1986. *Modern Movements in European Philosophy*. Manchester and New York: Manchester University Press.

- Kevles, Bettyann Holtzmann. 1997. *Naked to the Bone: Medical Imaging in the Twentieth Century*. Reading, MA: Addison Wesley.
- Kleist, Heinrich von. 1983. "Puppet Theatre." In *What Is Dance?* ed. Roger Copeland, and Marshall Cohen, 178-184. Oxford: Oxford University Press.
- Kozel, Susan. 1994. "As Vision Becomes Gesture." Ph.D. Thesis. Department of Philosophy, University of Essex, UK.
- Kozel, Susan. 1997a. "Multi-Medea: Shrinkspace." *Archis: Architecture—City—Visual Culture* (Rotterdam), vol. 7: 76-79.
- Kozel, Susan. 1997b. "The Carbon Unit in the Silicon Domain." *Writings on Dance* (Sydney, Australia), issue 17 (Summer): 21-31.
- Kozel, Susan. 1998a. "Marionettes and Dancers: Dance and Digital Technologies." *Archis: Architecture—City—Visual Culture* (Rotterdam), vol. 10: 61-65.
- Kozel, Susan. 1998b. "Exiles, Ghosts and Astronauts: Physical Interventions in the Critique of Virtual Culture." *Aura, filmvetenskaplig tidskrift* (Swedish Journal of Film Studies) (April): 83-90.
- Kozel, Susan. 1998c. "Multi-Medea: Feminist Performance Using Multimedia Technologies." In *The Routledge Reader in Gender and Performance*, ed. L. Goodman, 299-302. London: Routledge.
- Kozel, Susan. 1998d. "Spacemaking: Experiences of a Virtual Body." In *The Routledge Reader in Dance Studies*, ed. Alexandra Carter, 81-88. London and New York: Routledge.
- Kozel, Susan. 1999. "Ghostcatching: More Perspectives on Captured Motion." *Archis: Architecture—City—Visual Culture* (Rotterdam), vol. 4: 70-74.
- Kozel, Susan. 2000a. "Infinitesimal Clouds of Electrical Charge: A Life Approached through Interactive Live Performance." *La Mazarine: Tragédies Charnelles Nature et Écologie* (Paris), 13 March, 65-72.
- Kozel, Susan. 2000b. "Transparent and Artificial: Refiguring Embodiment and Artificial Life through Computer-Mediated Performance." In *Consciousness Reframed III: Art and Consciousness in the Post-biological Era*. Newport: University of Wales College, Newport.
- Kozel, Susan. 2005. "Immanent Technologies: The Creative Relationship Between Dancers and Responsive Computer Systems in Live Performance." In *Contemporary Dances in Reflections of Social Phenomena, Proceedings from the 20th International Academic Symposium*. Seoul: The Korean Society of Dance.
- Kozel, Susan. 2006a. "Revealing Practices: Heidegger's *Techné* Interpreted through Performance in Responsive Systems." In *Performance Research* 10.4 (February): 33-44.
- Kozel, Susan. 2006b. "How We Dare." In *The North in a Global Context, Proceedings from the 8th International NOFOD Conference*. Stockholm: Nordic Forum for Dance Research.
- Kozel, Susan. 2006c. "Culture as Proprioception: Challenging Acultural Approaches to Computer Technologies in Dance." In *Shifting Sands: Dance in Asia and the Pacific*, ed. Stephanie Burridge, 149-156. Braddon, A.C.T.: Australian Dance Council.
- Kozel, Susan. 2007a. "Virtual/Virtuality." In *Performance Research* 11.3: 136-139.
- Kozel, Susan. 2007b. "Interactive." *Performance Research* 11.3: 71-75.
- Kozel, Susan. 2007c. "Phenomenology." *Performance Research* 11.3: 91-94.



- Kozel, Susan, and Lizbeth Goodman, with Katherine Milton. 2005. "The SMARTshell: Connecting Performance Practice to Tools for Connected Learning." In *A Guide to Good Practice in Collaborative Working Methods and New Media Tools Creation*, ed. Lizbeth Goodman and Katherine Milton, 181-202. London: Office for Humanities Communication, King's College London.
- Kozel, Susan, and Gretchen Schiller. 2006. "Passus: A Choreographic System for Kinaesthetic Responsivity." In *Responsive Architectures: Subtle Technologies 2006*, ed. P. Beesley, S. Hirose, J. Ruxton, M. Trankle and C. Turner, 98-101. Toronto: Riverside Architectural Press.
- Kozel, Susan, and Thecla Schiphorst. 2002. "Pulp Fashion/Wearable Architectures [Fabricating the Whisper Project]." Available at <http://www.meshperformance.org>.
- Kozel, Susan, and Kirk Woolford. 1999. "Utterance 5: Mesh Performance Partnerships." *Performance Research*, 4, no. 2: 61-63.
- Kristeva, Julia. 1982. *Powers of Horror: An Essay on Abjection*. New York: Columbia University Press.
- Kuhn, Thomas S. 1996. *The Structure of Scientific Revolutions*, 3rd ed. Chicago and London: The University of Chicago Press.
- Laban, Rudolf von. 1966. *Choreutics*, ann. and ed. Lisa Ullman. London: Macdonald & Evans.
- Laban, Rudolf von. 1992. *The Mastery of Movement*, rev. Lisa Ullman. Plymouth: Northcote House.
- Laban, Rudolf von, and Frederick Charles Lawrence. 1947. *Effort*. London: Macdonald & Evans.
- Lacan, Jacques. 1989. *Écrits*, trans. A. Sheridan. London: Tavistock/Routledge.
- Lacan, Jacques. 1990. "Seminar of 21 January 1975." In *Jacques Lacan and the École Freudienne: Feminine Sexuality*, ed. J. Mitchell and J. Rose, 162-171. London: Macmillan.
- Langer, Susanne. 1942. *Philosophy in a New Key*. Cambridge, MA, and London: Harvard University Press.
- Langer, Susanne. 1953. *Feeling and Form*. New York: Charles Scribner's Sons.
- Langton, Christopher G. 1996. "Artificial Life." In *The Philosophy of Artificial Life*, ed. Margaret A. Boden, 39-94. Oxford: Oxford University Press.
- Latour, Bruno. 1993. *We Have Never Been Modern*, trans. Catherine Porter. Cambridge, MA, and London: Harvard University Press.
- Laurel, Brenda. 1993. *Computers as Theatre*. Reading, MA: Addison-Wesley Publishing Company.
- Leder, Drew. 1990. *The Absent Body*. Chicago: University of Chicago Press.
- Lefort, Claude. 1990. "Flesh and Otherness." In *Ontology and Alterity in Merleau-Ponty*, ed. Galen A. Johnson and Michael B. Smith, 3-13. Evanston, IL: Northwestern University Press.
- Lem, Stanislaw. 1975 (1967). *The Cyberiad: Fables for the Cybernetic Age*, trans. Michael Kandel. London: Secker & Warburg.
- Levinas, Emmanuel. 1990. "Intersubjectivity: Notes on Merleau-Ponty." In *Ontology and Alterity in Merleau-Ponty*, ed. Galen A. Johnson and Michael B. Smith, 55-60. Evanston, IL: Northwestern University Press.

- Levinas, Emmanuel. 2002. *Otherwise than Being or Beyond Essence*, trans. A. Lingis. Pittsburgh: Duquesne University Press.
- Lilja, Efva. 2003. *Words on Dance*. ELD (Efva Lilja Dance). Stockholm: Print Katarinaträyk.
- Lilja, Efva. 2004. *Dance—For Better, For Worse*. ELD (Efva Lilja Dance). Stockholm: Print Katarinaträyk.
- Lingis, Alphonso. 2002. "Translator's Introduction." In *Otherwise than Being or Beyond Essence*, by Emmanuel Levinas, xvii-xlv. Pittsburgh: Duquesne University Press.
- Llewellyn, John. 1991. "Am I Obsessed by Bobby? (Humanism of the Other Animal)." In *Re-reading Levinas*, ed. R. Bernasconi and S. Critchley, 234-245. Bloomington and Indianapolis: Indiana University Press.
- Lloyd, Genevieve. 2004. *Spinoza and the Ethics*. London: Routledge.
- Lovitt, W., and H. B. Lovitt. 1995. *Modern Technology in the Heideggerian Perspective, Volume II*. Lewiston, Queenston, Lampeter: The Edwin Mellen Press.
- Lozano-Hemmer, Raphaël. 1997. "Re: Positioning Fear," *Relational Architecture* 3. Available at <http://www.lozano-hemmer.com/>.
- Lynn, Greg. 1998. *Folds, Bodies and Blobs: Collected Essays*. Brussels: Books-by-Architects, la lettre volée.
- Lynn, Greg. 1999. "Bio Time." In *Anytime*, ed. Cynthia C. Davidson, 266-271. Cambridge, MA, and London: The MIT Press.
- Lyotard, Jean Francois. 1993. *Libidinal Economy*, trans. Iain Hamilton Grant. London: The Athlone Press.
- Madison, Gary Brent. 1981. *The Phenomenology of Merleau-Ponty*. Athens: Ohio University Press.
- Madison, Gary Brent. 1990. "Flesh as Otherness." In *Ontology and Alterity in Merleau-Ponty*, ed. G. A. Johnson and M. B. Smith, 27-34. Evanston, IL: Northwestern University Press.
- Maitland, Jeffrey. 1995. *Spacious Body: Explorations in Somatic Ontology*. Berkeley, CA: North Atlantic Books.
- Marini, Marcelle. 1986. *Jacques Lacan*. Paris: Belfond.
- Marks, Elaine, and Isabelle de Courtivron. 1986. *New French Feminisms*. Sussex, UK: Harvester Press Ltd.
- Marks, Laura U. 2000. *The Skin of the Film: Intercultural Cinema, Embodiment, and the Senses*. Durham, NC, and London: Duke University Press.
- Marks, Laura U. 2002. *Touch: Sensuous Theory and Multisensory Media*. Minneapolis and London: University of Minnesota Press.
- Massey, Doreen. 1994. "A Global Sense of Place." In *Space, Place and Gender*. Cambridge: Polity Press.
- Massey, Doreen. 2003. "Geographies of Responsibility." In *Geografiska Annaler, Series B Human Geography*, special issue on The Political Challenge of Relational Space, ed. Doreen Massey, 5-18. Swedish Society for Anthropology and Geography. London: Blackwell Publishing.
- Massumi, Brian. 2002. *Parables for the Virtual: Movement, Affect, Sensation*. Durham, NC, and London: Duke University Press.
- Mauss, Marcel. 1992. "Techniques of the Body." In *Incorporations*, ed. Jonathan Crary and Sanford Kwinter, 454-477. New York: Zone Books.

- Mayer, Paul A. 1998. "Computer-mediated Interactivity: A Social Semiotic Perspective." In *Convergence: The Journal of Research into New Media Technologies* 4, no. 3 (autumn): 40-58.
- Mazis, Glen. 2002. *Earthbodies: Rediscovering Our Planetary Senses*. Albany: SUNY Press.
- McClary, Susan. 1991. *Feminine Endings: Music, Gender, and Sexuality*. Minneapolis and London: University of Minnesota Press.
- McEwan, Ian. 2006. *Saturday*. London: Vintage.
- McKenzie, J. 2001. *Perform or Else: From Discipline to Performance*. New York: Routledge.
- McLuhan, Marshall. 1964. *Understanding Media: The Extensions of Man*. New York: McGraw-Hill.
- Mensch, James Richard. 2001. *Postfoundational Phenomenology: Husserlian Reflections on Presence and Embodiment*. University Park, PA: Pennsylvania State University Press.
- Merleau-Ponty, Maurice. 1964a. "Eye and Mind." In *The Primacy of Perception*, ed. James M. Edie, trans. Carlton Dallery, 159-190. Evanston, IL: Northwestern University Press.
- Merleau-Ponty, Maurice. 1964b. "The Child's Relation with Others." In *The Primacy of Perception*, ed. James M. Edie, trans. William Cobb, 96-155. Evanston, IL: Northwestern University Press.
- Merleau-Ponty, Maurice. 1964c. *Signs*, trans. Richard McCleary. Evanston, IL: Northwestern University Press.
- Merleau-Ponty, Maurice. 1968. *The Visible and the Invisible*, trans. Alphonso Lingis. Evanston, IL: Northwestern University Press.
- Merleau-Ponty, Maurice. 1973. *The Prose of the World*. Evanston, IL: Northwestern University Press.
- Merleau-Ponty, Maurice. 1989. *Phenomenology of Perception*, trans. Colin Smith. London: Routledge.
- Merleau-Ponty, Maurice. 1993. "Phenomenology and Psychoanalysis: Preface to Hesnard's L'Oeuvre de Freud." In *Merleau-Ponty and Psychology*, ed. Keith Hoeller. Atlantic Highlands, NJ: Humanities Press.
- Mitchell, Juliet, and Jacqueline Rose. 1990. *Feminine Sexuality: Jacques Lacan and The Ecole Freudienne*. London: Macmillan.
- Moran, Dermot. 2000. *Introduction to Phenomenology*. London and New York: Routledge.
- Moravec, Hans. 1988. *Mind Children: The Future of Robot and Human Intelligence*. Cambridge, MA, and London: Harvard University Press.
- Morse, Margaret. 1998. *Virtualities: Television, Media Art, and Cyberculture*. Bloomington and Indianapolis: Indiana University Press.
- Morse, Margaret. 2003. "The Poetics of Interactivity." In *Women, Art, and Technology*, ed. Judy Malloy, 16-33. Cambridge, MA, and London: The MIT Press.
- Murphy, Michael. 1992. *The Future of the Body: Explorations into the Further Evolution of Human Nature*. New York: Tarcher/Putnam.
- Myers, Thomas W. 2001. *Anatomy Trains: Myofascial Meridians for Manual and Movement Therapists*. Edinburgh, London, New York: Churchill Livingstone, Elsevier.



Norman, Donald. 1998. *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution*. Cambridge, MA, and London: The MIT Press.

Norman, Sally Jane. 2006. "Locative Media and Instantiations of Theatrical Boundaries," *Leonardo Electronic Almanac* Issue on Locative Media 14, no. 3. Available at [http://leoalmanac.org/journal/vol\\_14/lea\\_v14\\_n03-04/](http://leoalmanac.org/journal/vol_14/lea_v14_n03-04/).

Orlan. 2004. *Orlan: Carnal Art*, trans. Deke Dusinberre. Paris: Flammarion; London: Thames & Hudson.

Pelli, Denis G. 2005. "What Is Observation? James Turrell's Skyspace at P.S.1." In *James Turrell*, ed. A. M. Torres, 1-4. Spain: Institute Valencia d'Art Modern.

Petchesky, Rosalind Pollack. 2000. "Foetal Images: The Power of Visual Culture in the Politics of Reproduction." In *The Gendered Cyborg: A Reader*, ed. Gill Kirkup, Linda Janes, Kath Woodward, and Fiona Hovenden, 171-192. London and New York: Routledge.

Peters, John Durham. 1994. "The Gaps of Which Communication Is Made." In *Critical Studies in Mass Communication* 11, no. 2 (June): 117-140.

Phelan, Peggy. 1993. *Unmarked: The Politics of Performance*. London and New York: Routledge.

Picard, Rosalyn. 1998. *Affective Computing*. Cambridge, MA, and London: The MIT Press.

Pile, Steve. 1996. *The Body and the City: Psychoanalysis, Space and Subjectivity*. London and New York: Routledge.

Plant, Sadie. 1997. *Zeros and Ones: Digital Women and the New Technoculture*. London: Fourth Estate.

Postman, Neil. 1993. *Technopoly: The Surrender of Culture to Technology*. New York: Vintage Books.

Rainer, Yvonne. 2006. *Feelings Are Facts*. Cambridge, MA, and London: The MIT Press.

Rajchman, John. 1999. "Time Out." In *Anytime*, ed. Cynthia C. Davidson, 152-157. Cambridge, MA, and London: The MIT Press.

Rajchman, John. 2001. "Introduction." In *Pure Immanence. Essays on a Life*, by Gilles Deleuze, trans. Anne Boyman, 7-23. New York: Zone Books.

Read, Alan. 1995. *Theatre and Everyday Life: An Ethics of Performance*. London and New York: Routledge.

Rheingold, Howard. 1991. *Virtual Reality*. London: Mandarin.

Robertson, Robin. 2006. *Swithering*. Orlando, FL: A Harvest Original, Harcourt Inc.

Roszak, Theodore. 2001. *The Voice of the Earth: An Exploration in Ecopsychology*. Grand Rapids, MI: Phanes.

Rothfield, Philipa. 2005. "Attending to Difference: Phenomenology and Bioethics." In *Ethics of the Body: Post-conventional Challenges*, ed. M. Shildrik and R. Mykitiuk, 29-48. Cambridge, MA, and London: The MIT Press.

Rouhiainen, Leena. 2003. "Living Transformative Lives: Finnish Freelance Dance Artists Brought into Dialogue with Merleau-Ponty's Phenomenology." Doctoral dissertation. Helsinki: Theatre Academy.

Russell, Ben. 1999. *Headmap Manifesto*. Available online at <http://www.headmap.org> (accessed October 2005).

Ryan, Susan E. 2004. "Computer Couture? Or, Queer Eye for the Cyborg." Conference presentation, International Symposium of Electronic Art (ISEA), Tallinn, Estonia.

Saltz, David. 1997. "The Art of Interaction: Interactivity, Performativity, and Computers." *Journal of Aesthetics and Art Criticism* 55, no. 2 (Spring) 117-128.

Scarry, Elaine. 1985. *The Body in Pain: The Making and Unmaking of the World*. New York and Oxford: Oxford University Press.

Schechner, Richard. 2002. *Performance Studies: An Introduction*. London and New York: Routledge.

Schechner, Richard. 2003. *Performance Theory*. London and New York: Routledge.

Schiller, Gretchen. 2003. "The Kinesfield: A Study of Movement-based Interactive and Choreographic Art." Ph.D. thesis. University of Plymouth, UK.

Schiphorst, Thecla. 2005. "whisper[s]." In *aRt&D: Research and Development in Art*. Rotterdam: V2\_publishing, NAI Publishers.

Schiphorst, Thecla, and Kristina Andersen. 2004. "Between Bodies: Using Experience Modeling to Create Gestural Protocols for Physiological Data Transfer." The Association for Computing Machinery Special Interest Group on Computer-Human Interaction. CHI Fringe, Vienna: Austria. Available at <http://whisper.iat.sfu.ca/PDF/between-bodies.pdf>.

Schneider, Rebecca. 1997. *The Explicit Body in Performance*. London and New York: Routledge.

Schwartz, Hillel. 1992. "The New Kinaesthetic of the Twentieth Century." In *Incorporations*, ed. J. Crary and S. Kwin-ter, 70-127. New York: Zone.

Sheets-Johnstone, Maxine. 1979a. *The Phenomenology of Dance*. London: Dance Books Ltd.

Sheets-Johnstone, Maxine. 1979b. "On Movement and Objects in Motion: The Phenomenology of the Visible in Dance." In *Journal of Aesthetic Education* 13, no. 2 (April): 33-46.

Sheets-Johnstone, Maxine. 1984. *Illuminating Dance: Philosophical Explorations*. London and Toronto: Associated University Presses.

Sheldrake, Rupert. 1995. *The Presence of the Past: Morphic Resonance and the Habits of Nature*. Rochester, VA: Park Street Press.

Sheldrake, Rupert. 2003. *The Sense of Being Stared At: And Other Unexplained Powers of the Human Mind*. New York: Random House.

Shelley, Mary. 1993. *The Essential Frankenstein*, ed. Leonard Wolf. New York and London: Plume.

Shildrick, Margrit, and Roxanne Mykitiuk, eds. 2005. *Ethics of the Body: Postconventional Challenges*. Cambridge, MA, and London: The MIT Press.

Sobchack, Vivian, ed. 2000. *Meta Morphing: Visual Transformation and the Culture of Quick Change*. Minneapolis and London: University of Minnesota Press.

Sobchack, Vivian. 2004. *Carnal Thoughts: Embodiment and Moving Image Culture*. Berkeley: University of California Press.

Spada, Emanuela. Cenami. 1997. "Amorphism, Mechanomorphism, and Anthropomorphism." In *Anthropomorphism, Anecdotes and Animals*, ed. R. W. Mitchell, N. S. Thompson, and H. L. Miles, 36-47. Albany: SUNY Press.

- Spinoza. 2000. *Ethics*, ed. and trans. G. H. R. Parkinson. Oxford Philosophical Texts. Oxford: Oxford University Press.
- Stafford, Barbara Maria. 1993. *Body Criticism: Imaging the Unseen in Enlightenment Art and Medicine*. Cambridge, MA, and London: The MIT Press.
- Stelarc. 1984. *Obsolete Body: Suspensions*, ed. James D Paffrath. Davis, CA: J. P. Publications.
- Stelarc. 2000. "Towards the Post-Human: Body to Cyber-system." In *Cyber-Reader: Critical Writings for the Digital Era*, ed. Neil Spiller, 262-269. London: Phaldon.
- Stone, Allucquère Roseanne. 1995. *The War of Desire and Technology at the Close of the Mechanical Age*. Cambridge, MA, and London: The MIT Press.
- Taylor, Mark C. 1997. *Hiding*. Chicago: University of Chicago Press.
- Taylor, Mark. 2001. "The Moment of Complexity: Emerging Network Culture. Chapter 1: From Grid to Network." Available at <http://www.press.uchicago.edu/Misc/Chicago/791173.html>.
- Taylor, Mark C., and Esa Saarinen. 1994. *Imagologies*. London and New York: Routledge.
- Tharp, Twyla. 1993. *Push Comes to Shove*. New York: Bantam Books.
- Thomas, Helen. 2003. *The Body, Dance, and Cultural Theory*. Basingstoke: Palgrave Macmillan.
- Thrift, Nigel. 2000. "Performing Cultures in the New Economy." *Annals of the Association of American Geographers* 90:674-692.
- Thrift, Nigel. 2003. "Intensities of Feeling: Towards a Spatial Politics of Affect." In *Geografiska Annaler, Series B Human Geography*, special issue on The Political Challenge of Relational Space, ed. Doreen Massey, 57-78. Swedish Society for Anthropology and Geography. London: Blackwell Publishing.
- Tufnell, Miranda, and Chris Crickmay. 1990. *Body, Space, Image: Notes Towards Improvisation and Performance*. London: Dance Books.
- Turner, Donald. 2003. "Altruism across Species Boundaries: Levinasian Ethics and the Meaning of Human Uniqueness." Paper presented at Works of Love: Scientific and Religious Perspectives on Altruism, Villanova, PA, May 31-June 6, 2003. Available at <http://www.metanexus.net/conference2003/paperpresenters.html>.
- Valéry, Paul. 1964. *The Collected Works of Paul Valéry*, vol. 13, ed. Jackson Matthews. London: Routledge & Kegan Paul.
- Varela, F., and S. Frenk. 1987. "The Organ of Form." *Journal of Social Biological Structure* 10: 73-83.
- Varela, Francisco. 1995. "The Emergent Self." In *The Third Culture*, ed. John Brockman, 209-222. New York: Touchstone, Simon & Schuster, Inc.



Varela, Francisco, and Jonathan Shear. 2002. "First-Person Methodologies: What, Why and How." In *The View from Within: First-Person Approaches to the Study of Consciousness*, ed. F. Varela and S. Shear, 1-14. Thorverton and Bowling Green: Imprint Academic.

Varela, Francisco J. 1999. *Ethical Know-How: Action, Wisdom, and Cognition*. Stanford, CA: Stanford University Press.

Varela, Francisco J., Evan Thompson, and Eleanor Rosch. 1993. *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, MA, and London: The MIT Press.

Vasseleu, Cathryn. 1998. *Textures of Light: Vision and Touch in Irigaray, Levinas and Merleau-Ponty*. London and New York: Routledge.

Virilio, Paul. 1991. *Aesthetics of Disappearance*. New York: Semiotext(e).

Virilio, Paul. 1994. *The Vision Machine*. Bloomington: Indiana University Press.

Virilio, Paul. 1995. *The Art of the Motor*, trans. Julie Rose. Minneapolis and London: University of Minnesota Press.

Virilio, Paul. 1999. *Politics of the Very Worst: An Interview with Philippe Petit*, trans. Michael Cavaliere. New York: Semiotext(e).

Virilio, Paul. 2003. *Art and Fear*. London: Continuum.

Walser, Randal. 1991. "Elements of a Cyberspace Playhouse." In *Virtual Reality: Theory, Practice, and Promise*, ed. S. Helsel and J. P. Roth, 51-64. Westport, CT: Meckler.

Whitford, Margaret. 1991. *Luce Irigaray: Philosophy in the Feminine*. London and New York: Routledge.

Wolff, Janet. 1993. *The Social Production of Art*. London: Macmillan Press.

Young, Iris. 1998a. "Pregnant Embodiment." In *Body and Flesh: A Philosophical Reader*, ed. Donn Welton, 274-285. Malden, MA, and Oxford: Blackwell Publishers.

Young, Iris. 1998b. "'Throwing Like a Girl': Twenty Years Later." In *Body and Flesh: A Philosophical Reader*, ed. Donn Welton, 286-290. Malden, MA, and Oxford: Blackwell Publishers.

Žižek, Slavoj. 1995. *Looking Awry: An Introduction to Jacques Lacan through Popular Culture*. Cambridge, MA, and London: The MIT Press.

